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VOL. XLI—No. 1

BRICK AND CLAY RECORD

JULY 1, 1912

BALTIMORE PROFITS BY BIG FIRE'S LESSON

Pins Faith to Clay and Rebuids City With Brick and Terra Cotta—Guards Against Possible Disaster in the Years to Come

By Stuart Stevens Scott

ONE of the things that seems, these days, to proclaim a great city is a "broken skyline" and, in this respect, Baltimore must be numbered among those municipalities that claim this feature, for the skyline of the Monumental City is a rather ragged one.

It has been but a little more than eight years since the entire wholesale business district of the city, comprising 86 business blocks and covering 140 acres, was reduced to a wilderness of ruins by the greatest fire ever known in the East. Today, save for less than half a dozen vacant lots, here and there, there is nothing to indicate that the city was ever swept by a fire. The recovery is not only complete, but there is none to say that the fire was not a blessing, and not one in disguise, either.

Within the entire 140 acres of devastated territory, there was not a single frame structure and although some of the buildings dated back more than 100 years, even these were of brick. A few of them even were built of brick that were brought to this country from England in Colonial days.

One of the features of the fire was that there were three small brick buildings which went through unscathed, largely due to the fact that they were not only close to the ground and surrounded by taller structures which seemed to break off the flames, but due more to the windows of the buildings being glazed with wire glass.

All of the huge office buildings,—the so-called fireproof structures, were gutted and every vestige of their wooden trimmings and their contents destroyed. The steel frames, however, with their brick and terra cotta covering, stood in perfect shape.

Brick Plays Most Important Part in Reconstruction.

In the rebuilding of the city, brick has played a more important part than any other material, unless it be terra cotta and there are scores of splendid warehouses, from three to six and seven stories in height, that are of what is known as "mill" construction with facades of pressed brick and terra cotta trim.

One of the largest individual property owners in the 'Burnt District," as that section is known, is the Johns Hopkins Hospital. This institution includes about 50 pieces of property, all of which have been built on and they include some of the best of the new buildings. One of these structures is on the northeast corner of Light and Pratt streets and covers land that, before the fire, was occupied by nine separate buildings. Now this entire ground is under one roof, although the structure is subdivided for several tenants.

Another similar structure is that recently erected on the northeast corner of Lombard and Hanover street. This building covers eleven lots and, in point of ground floor area, is one of the largest in the city.

While in all parts of the "Burnt District" there are many fine brick structures, the handsomest of them all are the homes of the "Baltimore American" and the "Baltimore News." The former is a 14-story building and the latter a 16-story building. Both are of steel skeleton construction with pressed brick and terra cotta facades and with terra cotta floors and partitions.

There is now nearing completion a 24-story tower building at Baltimore and North streets for the Maryland Casualty Co., the tower being an addition to the structure that was erected immediately after the 1904 fire. This tower, as well as the building, is of pressed brick and terra cotta and is one of the ornaments of the city.

Two other important office buildings are the Keyser and the Bell Telephone buildings. The former is 10 stories and the latter is 11 stories high, both having pressed brick and terra cotta facades.

Hotel Aids "City Beautiful" Idea.

In the "Burnt District" are two large hotels, the 16-story Emerson and the eight-story Caswell. The Emerson is one of the handsomest structures of its kind and, with its cream, pressed brick front, set off with white terra cotta, is especially attractive. On the roof of the Emerson is a winter garden, a two-story terra cotta addition which adds to the height and impressiveness of the structure. The Caswell, however, is more ordinary, its front being of red brick.

The huge office building of the Baltimore & Ohio railroad at Baltimore and Charles streets—the largest building in the United States occupied entirely by one concern, is 200 feet square and 13 stories high. The first three stories are of stone, but above this it is faced with gray brick.

Opposite the Baltimore & Ohio building is the home of the "Baltimore Sun," an attractive terra cotta building, modeled on the lines of a Roman temple and, although but four stories high, its lines are strong and it does not look amiss by being overshadowed by the high railroad building.

In what is known as the dry goods district, where are located most of the firms that have given Baltimore its reputation as a jobbing center, are a score of handsome brick structures, all of which are of "mill" construction. Among the prominent ones are the houses of Daniel Miller, Florence McCarthy and John E. Hurst & Co. All of these buildings are from five to seven stories high.

There was one church that fell a victim to the flames of 1904—the Protestant Episcopal Church of the Messiah,

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on the corner of Gay and Lexington streets—an old-fashioned stone structure. In rebuilding this edifice, brick was used exclusively and while the structure is severe in style, it is nevertheless solid and substantial.

Brick construction is common in every large city, but Baltimore probably can claim there is as much burned clay used there as in any city of equal size, not only in the business district, but in the residence sections. Baltimore is a city of homes, although there are many beautiful structures of the apartment house type. More than half of the structures within the corporate limits of the city are two-story houses and the greater proportion of them have been erected within the past 15 or 20 years. In the Northeastern section, fully 5,000 of these two-story houses have been built within the past 10 years. Every one of them is built of brick with marble trim, many being rendered more attractive by the addition of porches. In numerous instances, where the builders of these houses have opened up large areas of land, they have also paved the streets, using brick, making the neighborhoods especially attractive to customers.

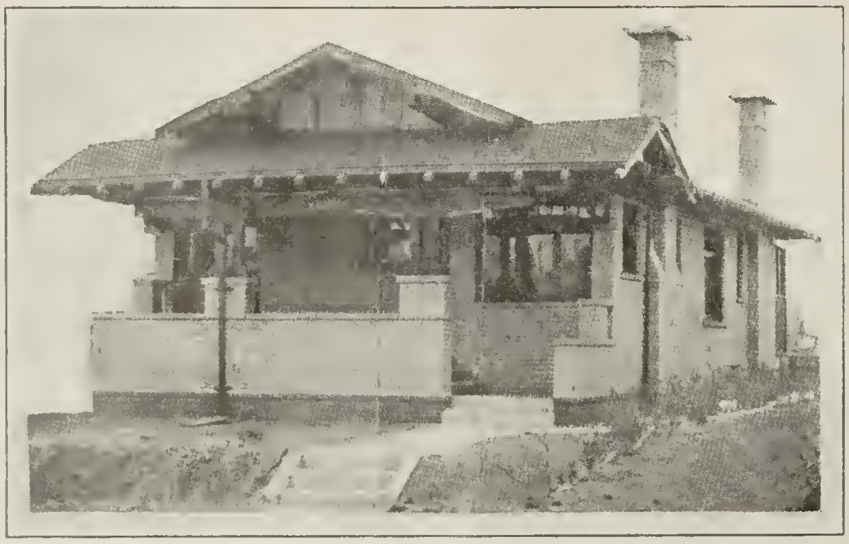
Brick Construction Covers Suburbs.

Within the past few years there has been much building in the western section of the city, hundreds of acres of land having been covered with two and three-story brick houses. This type of building has extended into the suburbs and the "Philadelphia" style of house, semi-detached, with porch front and side yard, is a popular type. Row after row of houses of this style have been built along the Reisterstown road, which runs to Pimlico and to the Country Club, as well as to Electric Park.

The building laws of Baltimore are stringent in regard to construction, frame buildings being forbidden within the city limits. For that reason, practically everything that has been erected within the past few years has been of either brick or concrete construction. The latter, save for warehouses, has but little vogue in the Monumental City and there has been but little of that material used. Brick is depended upon and as brick is dependable there is little reason to believe there will be any change in the high regard in which this material is held in Baltimore.

GREETINGS TO N. B. M. A.

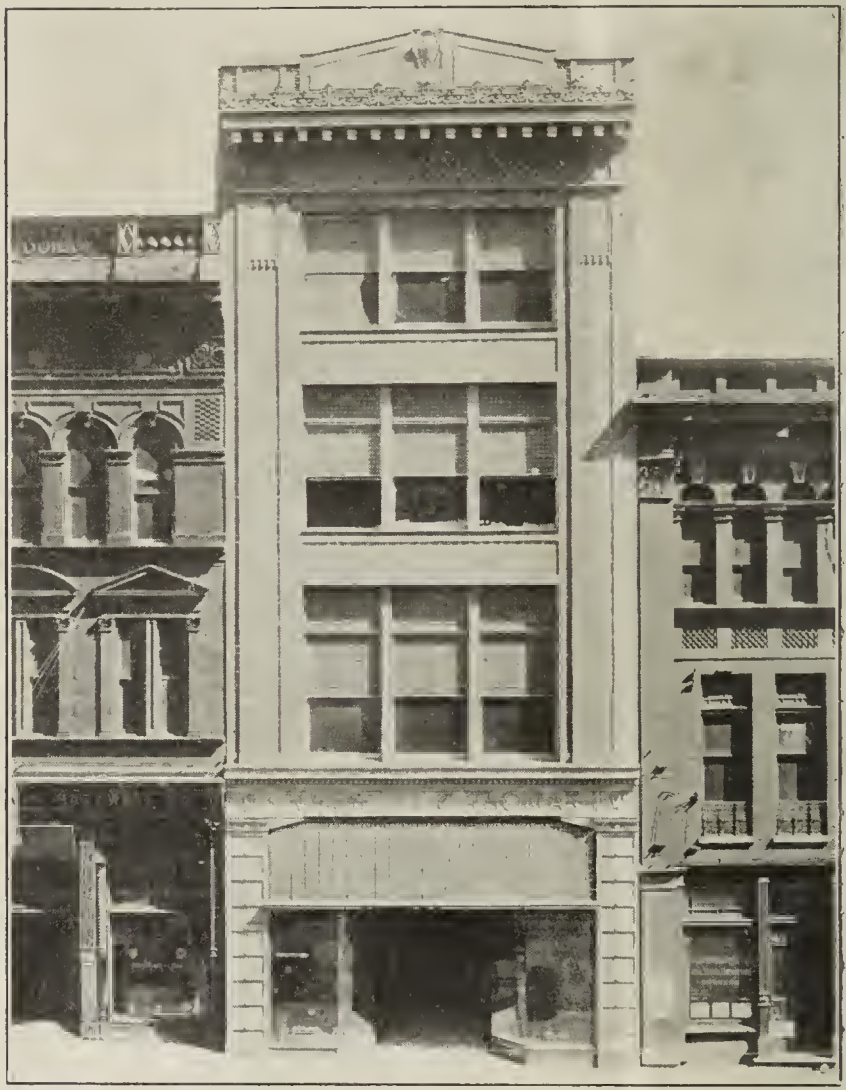
Upon her return home from the Chicago conventions last March, Mrs. G. A. Buckley, owner of the plant of the Buckley Brick & Tile Co., at Montrose, Col., retained pleasant memories of those whom she met in the Convention City, and at the joyous Easter season she sent all who registered at the convention an Easter Greeting, in the form of an original postcard, the decorative feature of which was most appropriate, being a neat brick bungalow, illustrated herewith.



"FLASH" BRICK EFFECTIVE.

The new building for the Wimberly & Thomas Hardware Company on First Avenue between 20th and 21st Streets, Birmingham, Ala., shown in the illustration, is of the Italian Renaissance design adapted to modern conditions. The building is thirty feet by one hundred eighty-two feet with entrances on both First and Morris Avenues.

Structurally it is one of the most substantial buildings in the city, and is practically fireproof. A feature worthy of note is the skill the architect used in designing a building absolutely without a column, so that the center floor space, thirty feet by one hundred and eighty feet is clear and open to the view throughout the entire length of the building.

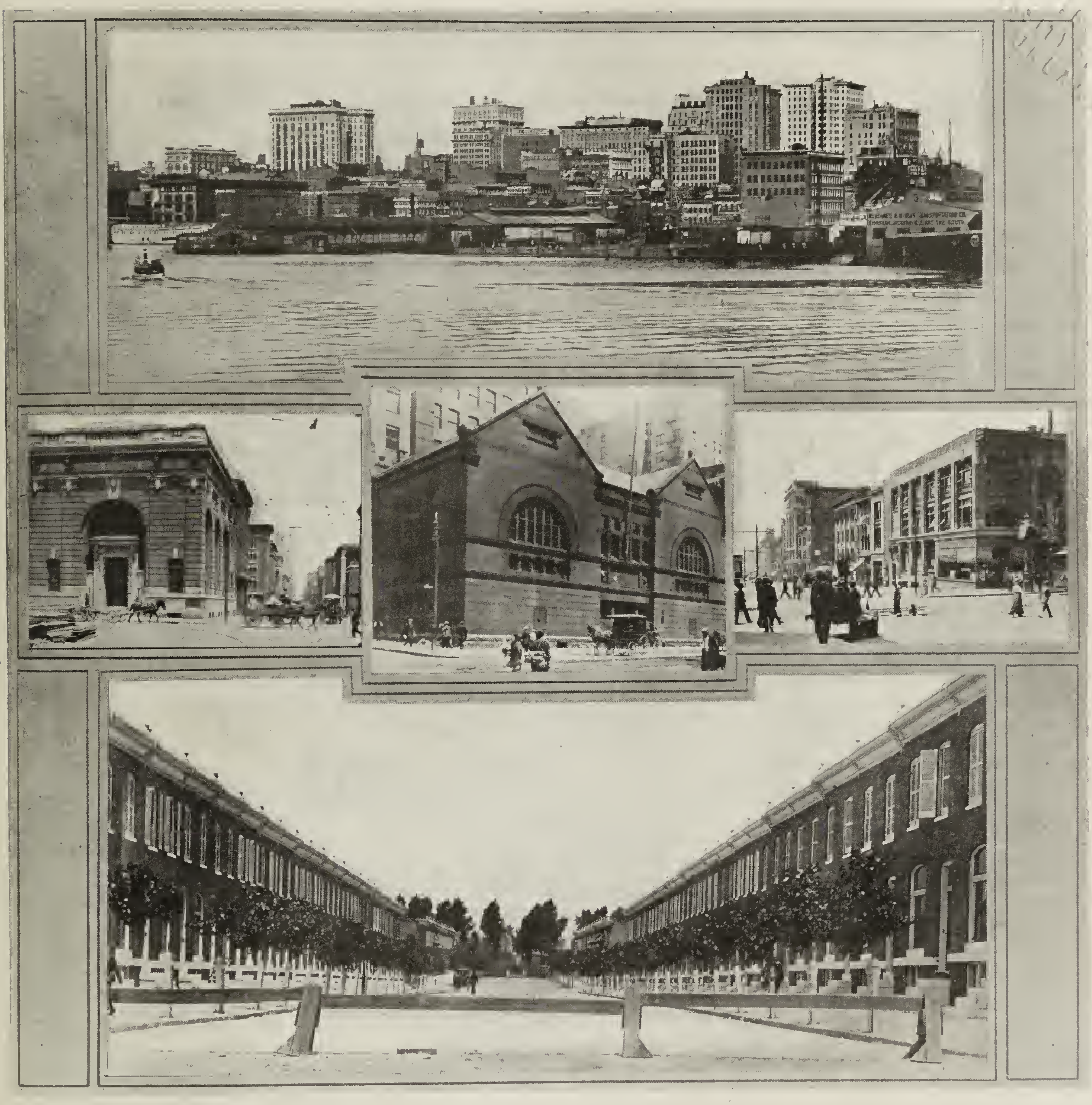


Wimberley & Thomas Building, Birmingham, Ala., Showing Decorative Effect of "Flash" Brick, Made by the Sibley-Menge Brick & Coal Co.

This building was designed by architect Wm. Leslie Welton, and is an example of his best style, indicating an original and unique treatment of brickwork, developing the possibilities of a local brick product of the Sibley Menge Press Brick Co. The Morris Avenue front is faced entirely with the "flash" brick manufactured by the Sibley-Menge Co., including the cornice and belt course, and indicates what can be done with brick in the hands of a skillful designer.

On the First Avenue façade gray terra cotta has been combined with pattern brick work in which "flash" brick were also used, exclusively to lend interest and variety to the wall surface. The cornice is of solid terra cotta without metal work and the chenneaux on top of same is particularly ornate, the models for which were approved by the architect before the terra cotta was burned. The monogram of the Wimberly & Thomas Hardware Co., appears here and there in the ornamentation of the terra cotta.

THE NEW AND GREATER FIREPROOF BALTIMORE



These pictures tell the story of Baltimore's precaution against the repetition of the fire that all but wiped out of the city, a little more than eight years ago. Profiting by that bitter lesson it has become a city of brick.

The upper picture shows the skyline of the city's business district rebuilt since 1904. The one just below, to the left, is the Mercantile Trust & Deposit Co.'s building, Calvert and German streets, which went through the big fire of 1904 without damage. This is a brick and terra cotta building of ordinary construction, which was saved by its wire glass windows and slate roof. The picture in the center is looking west in Lombard street from South street, and shows types of brick buildings in the wholesale district. The Farmers' & Merchants' National Bank, in the right foreground, is of red brick with white terra cotta trim. All the buildings are new since 1904. In the distance is the Emerson Tower building, a cream brick structure. The picture to the right in the center group is a view looking south in Light street from Baltimore street, showing a number of fine brick warehouses and stores, all of which have been built since 1904. At the bottom is a row of pretty homes in East Baltimore with brick-paved street built by the owner of the homes.

THE WORLD'S BIGGEST BUILDING.

The new Woolworth building, the subject of our frontispiece, may well be regarded as the eighth wonder of the world. This building, which touches the clouds at the 55th story, is the world's largest office building as well as the tallest inhabited structure in the world. Enormous quantities of burned clay material went into its construction and there is little doubt that more fireproofing materials were used in this building than in any structure, so far erected on the American continent.

The main portion of the building is 29 stories high, surmounted by a great tower 86x84 ft. square, bringing the total elevation to a height of 55 stories. The great electric lantern, which caps the tower, will be 750 ft. above the sidewalk and may be seen from a distance of 96 miles out at sea. Thirty square feet of fireproofing will be used in the walls and floors and an idea of the magnitude of the building may be gained from the fact that it weighs 250,000,000 tons, contains 20,000 tons of structural steel and the floor space will cover 23 acres. The building will contain 2,000 offices with a daily population of 10,000 people and as many more transients. The rent will amount to $2,500,000 annually; the site cost $4,500,000; the cost of digging the basement and sub-basements was $1,000,000; the cost of construction approximately $9,000,000, making a total investment of $13,500,000.

The exterior surface is of stone and terra cotta, and much burned clay in the form of common brick, tiles, enameled brick and fireproofing will be used throughout the building which will be a marvel in fireproof construction, every precaution having been taken to make it one of the safest and best constructed buildings on the continent.

In planning the decoration of the building, Mr. Gilbert, the architect, took advantage of the peculiar adaptability of terra cotta and its structural efficiency, its flexible modeling and its adaptability to color treatment and as a result the terra cotta ornamentation is of the most artistic character and is notable for its simplicity of treatment.

In comparison to other high buildings, the Woolworth building is 50 feet higher than the Metropolitan Tower; 133 ft. higher than the Singer Bldg., and 245 ft. higher than the Washington monument. The Eiffel Tower in France, which is 985 ft. high is the only higher structure in the world and it is not considered a building.

ROUND-CORNERED BRICK.

There has recently grown up quite a demand among architects and builders, for round-cornered pressed brick and while they have only recently been brought to general attention in building circles, the Dickinson Fire & Pressed Brick Co. of Dickinson, N. D., advises us that their company has been manufacturing this style of brick for some ten years past. A number of school buildings and business blocks in the Northwest have been faced with these brick, which produce a very attractive wall. One of the school buildings is shown in the accompanying illustration. The small picture shows a section of wall laid up for display at the company's plant.

Section of Wall Built of Round-cornered Brick, Made by the Dickinson (N. D.) Fire & Pressed Brick Co.

Jamestown (N. D.) High School Building Faced With Round-cornered Brick Made by Dickinson Fire & Pressed Brick Co.

FEMALE HOD-CARRIERS.

Over in Europe, woman is still man's "help mate," in a physical sense, at least, and shares his lot to the fullest extent of her marital vow.

So, when the husband is hod-carrier—the wife is as well—and on the outskirts of Fiume, Hungary, where a new building was under construction, the writer saw mi-lady and her daughter both shoulder the hod and bear it, loaded with brick or lime, to the place where it was needed.

Women Hod Carriers, a Common Sight in Foreign Countries.

The women are strong as Amazons, as the result of such exercise, in fact, stronger than most American men, and there seems to their simple minds, no reason why, with the children in school, and the noon-lunch prepared in the early morning, they should not assist their husbands at their labor, which goes to show that women have their rights in some parts of the world at least.

THE BOSS AND THE BUSINESS

Concluding Chapter of the Story of Blake's Management—Crisis Demands Instant and Vigorous Action—Financial Aid Secured in the Nick of Time.

By Daniel V. Casey

An Attack in Flank—Blake Finds the Weak Link in His Business Chain.

"An offer from Kelseys!"

In sheer amazement, Blake echoed his partner's halting phrase. Revelation of Mr. Downey's plight, the sudden, enigmatic calling of his loans, had thrust so shrewdly at their joint venture, no room was left for mere emotion. On the heels of the other news, however, disclosure that their huge, indefatigable rival had chosen this moment to bid for the factory, roused wonder, swift speculation and passionate antagonism in the young manager.

For a crowded quarter hour, while the elder man had rehearsed the events leading up to the ulimatum of the banks, Matt's mind had been away on other tracks, seeking vainly for some expedient which would at once relieve his partner and safeguard the business.

The Big Man Grimaced: "Don't, Blake," he ordered, "You make me giddy. Remember I am new to high finance."

No separation of interests was feasible. Despite the recent incorporation of the tile company, of which Mr. Downey was chief owner, Blake's own obligations to him involved the company in whatever of evil might befall him. The manager's third of their capital had been secured on a note executed to him and payable from dividends. When the factory began operating a year before, the elder man's credit was ample. Neither foresaw the burning of the Iowa elevators or conceived that, even with a train of minor disasters following, the fire could so impair his standing. Neither imagined a crisis like this, when sacrifice of the new factory should appear the only way to save his remaining enterprises. For none of these was there an immediate market; and only seven days remained for raising twenty-three thousand dollars to satisfy the banks.

Mr. Downey broke the silence. Gray defeat seamed his face; reluctantly his eyes met the manager's.

"I hate to think of it, Matt," he confessed, "but I can't see anything else to do. The banks notified me a week ago yesterday that they wouldn't renew. That is, Cotton at Hamilton did, and the two banks at home got scared when I asked them for money to take up Cotton's note. I've been all over three states since, trying to place my paper or find a buyer for one of my smaller plants.

"I thought I could straighten matters out"—his tone was apologetic—"without calling on you. I haven't forgotten that I dumped the burden of financing this business on to you, a while back; and it didn't seem fair to run to you with my personal troubles before I had exhausted every other chance."

"That's the size of it, son." He threw out his hands, palms upward, in a gesture of despair. "Unless you have some miracle up your sleeve, I'll have to sell my interest. The consolation is: the Kelseys will pay a good round price and they want you to continue as manager. You'll not lose anything."

Blake smiled. So far his partner was astray. Alliance with men who had taken him in the flank was not to be thought of. Their code was not his code. He could neither excuse nor employ the selling tactics they had used against him. That he had held his lines safe for eight months and wrung occasional advantages from them but increased his scorn of their methods.

His job or the factory's value, however, was not the issue. Instead of rescue, he saw the combine's proposal as a new, subtler attack.

"When did you see the Kelsey's?"

"Yesterday. I got their message Tuesday and took the morning train to Harvey."

"They wired you?"

"No. It was Cotton who told me they wanted the plant."

"Cotton!" Matt's suspicions took instant shape. The Hamilton bank held eleven thousand of the elder man's paper. Cotton's refusal to extend these notes had precipitated the crisis—Walters and other bankers taking fright at his action.

"Yes," Mr. Downey affirmed, perplexed by the manager's exclamation. "He called me up Tuesday when I got home from my trip, dead beat and at the end of my rope. Said he had news. I thought perhaps he had changed his mind about the notes. He hadn't, but he had met Tom Kelsey at Princeton and learned they were anxious to buy us out. He suggested selling as the easiest escape from my fix."

Blake hesitated. The sequence of events was suspiciously close. Intuition or prejudice, he could not shake off the dread that it was all prearranged. And even though he did the Kelseys injustice, he resolved to neglect nothing which would fortify his partner against acceptance. For the sake of the business he must believe the worst.

"Of course," he assented quietly. "Cotton probably met Tom Kelsey by appointment—to report progress and to talk over subsequent moves. They decided what price would induce you to sell. Cotton named that figure to you, I bet, and advised you to hold out until you got it."

The elder man started, so near was the bold surmise to what had actually occurred.

"You mean————?"

"I mean," Matt answered deliberately, "that Cotton put on the screws and gloomed Walters and Ertz as part of a scheme to force the sale of this plant to the Kelseys. And I mean——" he took breath on the resolution——"that the Kelseys can't have it at any price."

The Horns of a Dilemma—the Manager Charts His Course and Defies His Partners.

Alarm seized Mr. Downey. Loath as he was to surrender the factory, its sacrifice seemed the only way to avert disaster. That path must be kept open.

"Easy, son, easy," he pleaded. "I don't blame you for seeing the Kelsey' hand in everything. But this time you're shooting at shadows. I don't think Cotton had any motive except to get his money. From his angle, I expect his reasons for calling my loan were all right."

Matt's bolt had missed its aim. His partner was under the domination of a master fear, which mere anger could not overcome. Whatever plan might be evolved for rescuing the business, time and freedom of action were essential. To obtain these, the other must be assured of final safety. Accordingly he made quick change of front.

"What will the Kelseys give us?"

"Why——" Mr. Downey hesitated, tugged at his beard—"I thought you understood, Matt. They only want control. They're anxious you should keep your interest and run the place. Tom Kelsey thinks you're a wonder. He said you'd be worth more than the shop itself. We didn't dicker—" he faltered again—"except for my two-thirds."

Blake's eyes narrowed. Compliments aside, the proposal was balder than he expected. The Kelseys could pay a substantial premium for his partner's shares and yet acquire the factory cheaply. Retention of his own stock would deliver him, bound and helpless into their hands. Should he refuse to accommodate himself to their policies, they could choose their occasion for forcing him out, for shutting down the factory, even for dismantling it.

All this was beside the question, however. He nursed the conviction that the Kelseys' program was going to fail. Though the manner of defeat was not clear, negotiation with them would, at least, provide the time for other combinations.

"I understand," he said. "When there's nothing else left, we'll close the deal, but do you realize how it will affect me?"

Briefly he indicated what his position would be—his utter dependence on the whims or policies of the new majority owners.

"When the break-up comes, if the transfer were carried out," he finished soberly, "I may not be able to realize enough from my stock to pay the note you hold. I want a contract protecting me in that event."

Mr. Downey lifted a shaking hand.

"Don't, Matt," he begged. "Whatever happens, I'll make things up to you. They'll give me 180 for my shares. That's twenty-four thousand for my two-thirds—more than ten thousand premium. Half of that premium is your's, son. If the Kelseys don't treat you right, or if, for any reason, you want to pull out after I get my affairs into shape again, I'll swap the note for your stock and refund the interest. That's how we'll word the contract."

Though moved by his partner's generosity, Blake found matters more absorbing in the value given their shares. Five times five thousand dollars would not buy him to willing surrender of this creature of his brain and blood and sweat, while the Kelsey proffer had an important bearing in establishing a market price for their holdings.

"We may not need that contract," he suggested. "If your stock is worth $24,000, it ought to strike Cotton as gilt-edged security for his loan. Why not tackle him again, putting up your shares as collateral?"

Mr. Downey kindled.

"By George, yes," he agreed. "I'll get right after him. If I can line him up again, I'll have no trouble with Walters and Ertz."

To Blake, the outcome of the attempt was foregone. Had the banker simply doubted the elder man's solvency, the eagerness of the Kelseys to buy the factory would have assured him. He had some other reason in reserve. His refusal would serve, however, to clinch his connection with the combine and bring the elder man to a mood of uncompromising hostility. That mood would have its uses later, should an eleventh hour hitch develop in the plan taking shape in his brain.

"Why not come down with me and talk to Cotton?" Mr. Downey urged. "You could convince him that I'm safe, just on our prospects here."

"No." Matt wanted the time for other efforts, welcomed the occupation of his partner elsewhere. "I couldn't. We'd probably quarrel at sight and get nowhere. Besides, I haven't time. There's a mile of twenty-fours coming through for the Random Run ditch and it will crowd us to make deliveries."

"Deliveries—bosh!" the other grunted. He had counted on Mattt's wit and persuasion to aid him with Cotton, while the younger man's devotion to the business in its present pass struck him as quixotic. "Don't you realize that the Kelseys are likely to make those deliveries? You'd profit more by looking after your personal interests."

Blake nodded, his face suddenly aglow.

"I don't realize it," he declared blithely. "In fact I'll not consider it until the hour strikes for answering the Kelseys. Right here we take different paths, Mr. Downey. It's your job.—" he paused in deference—"to handle Cotton or sell the plant to the best advantage. It's mine"—courage revived inexplicably in the elder man at the words—"to try to find money for your notes and keep control, if I can, of the business we have built here."

"Play Fair. Keep Close to the Earth and Look Out for the Indian Sign."

From the station—scene of Mr. Downey's final grooming for the encounter with Cotton—Blake hastened to the village bank. His plan had achieved definite outlines as he explained it to his partner and won consent to it. There remained the test of submission to the one man of his acquaintance who could furnish immediate succor or point a source from which this might be drawn.

The first issue he scarcely dared hope for. The business already enjoyed every banking favor the laws permitted. More: Mr. Sperry with the directness of elderly wealth and power, had carried his interest beyond the usual relations. Farmer, before becoming banker, he was neighbor before man of affairs, without abating, however, one jot of any bargain entered into. His counsel, his influence, his judgment of men and policies, he lent—well-nigh enforced—upon the young man. Withal, their friendship had grown steadily since his extension of credit had bridged the first financial crisis at the factory three months before.

His greeting to Matt was hearty, if casual. Few days passed now without a "visit"—in the wide, airy office next the bank or in the noisy focus of activity at the plant.

"Hite was in this morning," he announced, swinging around from a desk framed on his own ample scale. "He'll extend your option one year for a hundred and the taxes." He added, chuckling: "I coaxed him."

Blake took the news for an omen. Purchase of twenty acres of clay land adjoining the factory, deposits necessary to the future of the industry, had been one of the projects halted by Mr. Downey's initial misfortune in Iowa—the first chapter in the series of untoward happenings now come to a climax. On the eve of expiration, he was still unable to exercise the three months' option then secured. The banker's intervention was as grateful as it was timely: it removed a minor anxiety in this time of greater stress.

"Nonsense," the big man objected jovially to his thanks. "You've got a wad of my money tied up in your business. I want to get it back or keep you paying interest, don't I? I may push your nose down to the grindstone occasionally, myself, but I'll see that no one else scrapes it off. Besides, Hite is getting twice as much for his slough as any one but you would ever give him."

No mood could find the banker more approachable. Matt waived preliminaries and moved, though obliquely, to the attack.

"I wish"—he mustered an answering smile and essayed to speak lightly—"you'd cap all your favors by finding a new partner for me."

Despite his courage, weariness tinged the speech. Mr. Sperry caught the unfamiliar note.

"What's that?" he demanded brusquely. "Have you been getting into another hole?"

Loyalty led the manager to minimize his partner's share in the dilemma and to emphasize the Kelsey share in it. His effort brought no response, though the banker accepted his theory of prearrangement without demur. Lower and lower the latter hunched in his chair, his head shaking stubbornly at each new point, while crimson invaded more and more the tan of his square-hewn jaws.

"Partner!" he mocked gruffly as Blake finished, conscious of the complete failure of his argument, beating back his first access of fright. "What you want, young fellow is a guardian."

"Thunder and trash!" he roared, heaving his bulk out of the tilting chair, kicking savagely at a rumpled rug as he tramped to and fro. "Don't take it out on the Kelseys. They play the game—and play it the way it's been played since cave-men began to trade axes. If you don't know the rules—if you don't know where the rules break down—why keep off the track or keep your bets small until you learn by losing.

"The trouble with you, Blake"—he stopped to scowl at the tense figure beyond the desk—"is that you've got a personal standard of right and wrong and you expect every one else to live up to your construction of it. That's the fatal mistake—expecting anything from anybody else until you've proved him out.

"It's good business to be honest and dead square. I would not look at you or lend you a cent if you weren't both. It's good business to play fair and carry the ten commandments into your dealings with other men. That's what makes you a safe moral risk and gives you right-of-way through that door whenever you want to come. But it's bad business, it's nothing short of folly, to assume that these qualities exist in any man whose interests clash with yours as the Kelseys' interests clash. The only safe rule is to be square yourself, keep your feet on solid ground and watch for the Indian sign at every corner.

"And what have you done?" In exasperation he rapped the long central table with iron knuckles. "You've walked into a field already occupied by a big powerful company, proved to them that they can't meet your competition by any fair means, and expected them to surrender without a blow the business they've controlled for years. Worse still, you've tempted them to take advantage of your mistakes.

"You built on borrowed money, didn't you? You started without working capital. You plunged on the strength of one man's credit. By good luck and your own genius for management you pulled through. Again you weathered the storm in August, when your partner's credit collapsed. That time, it was I that plunged and you that imposed on me.

"I'm not blaming you, mind. You acted in good faith, I know. What aggravates me is that you should run yourself into a trap like this a second time and then look to me for help!

"How"—curiosity suddenly overcame irritation; he advanced to his vacant chair and stared down at the younger man—"How in the name of common sense do you expect to save the business and get twenty-three thousand dollars for this unfortunate partner of yours?"

The Pyramid of Hope—The Banker Decides Upon a New Investment.

Anger had kindled and puffed out in Blake, dumb under the banker's lashing. Purpose overbore the impulse to strike back. Intuition whispered of the feeling behind the outburst and urged patience. The reaction would leave Mr. Sperry apologetic and, more than ever, disposed to aid.

The big man's question, provoking in its form, nevertheless marked his moment. The pendulum was poised for the swing backwards. He pushed it.

"Let's get at your end first, Mr. Sperry," he proposed incisively. "If the Kelseys buy us out, they'll take over obligations as well as assets. Their credit is good for twenty times your loan. You've no call to think you'll lose a penny."

The banker bristled anew: this was misconceiving him. The security of his loans had not concerned him. No fault in Matt's analysis there. Regard had been the spring of his wrath. Were the young man son or brother, no word had been spared. At the same time the challenge in his reply was plain. Hurt, yet conscious of his violence, Mr. Sperry moved to make amends.

"Let's talk sense," he commanded gruffly. "My loans to your firm aren't worrying me. What I want to know is how you're going to save your own bacon. If you've got a plan, out with it. Maybe"—the tight line of his mouth relaxed—"I can help you put it through."

"Thank you—you can," Blake assured him. "I'm looking for another partner. Some one who can pay cash for half Mr. Downey's shares. Can you suggest anyone?"

Instantly the trader was uppermost in the other. He knew, in his capacity of banker, exactly what the factory had earned during its first year. Its field and future promised greater returns. The qualities of the young manager insured success against any odds which might transpire. More than once, in the last three months, since his relations with Matt had grown close, he had coveted the stock as an investment.

"A partner, eh?" He took time ostensibly to review the capitalists of his acquaintance. "What will the Kelseys give you?"

"One hundred and eighty. That would be twelve thousand for one third."

Mr. Sperry whistled.

"That's more than you'll get," he judged bluntly. "The Kelseys are paying a premium to put you out of business."

Blake flushed at the disparagement.

"The stock's worth that," he countered hotly. "Here's our inventory." He produced a typed memorandum, carbon of that pounded out for Mr. Downey's use. "Our book value is above 160, and four thousand dollars is low for good will."

The banker checked the items.

"Maybe," he admitted, "but 160 is high. You've been running only fifteen months.

"Suppose you sell a third at that figure"—he tilted ponderously in his chair—"what next? You need twelve thousand to pay Cotton alone. Suppose even"—his manner grew more detached, judicial—"that I've agreed to buy those shares at 160."

The manager's eyes gleamed. He had counted on the other's trading instinct, had anicipated just this offer.

"I'd rather have you for a partner"—in his earnestness he forgot policy for a moment—"than any man alive. But in this deal"—he mustered all of force and personality he possessed in this crisis—"I need your help more as banker."

"How?" Disappointment chilled the tone.

"I want you to take up my note to Mr. Downey—six thousand, six, sixty-six—and hold my stock as collateral. If you buy, I don't suppose you'll lend."

The probing eyes took stock of him. The silence conveyed no point.

"My life policy's for four thousand," he supplemented. "I'll assign that too."

"What's your fire insurance?" With the seemingly irrelevant question the tension snapped.

"Seven thousand." Blake caught the trend, was elated. "I'd have more, but the rate is plain piracy."

"Naturally"—the comment was caustic—"I counted three water barrels around your buildings where you should have twenty."

"Three," the young man confessed. "But I'll have twenty before night."

"Do," the banker advised. "Now, suppose we find a buyer for half of Downey's stock and I lend you the amount of his note. He's still shy six thousand, isn't he?"

Matt agreed.

"Pay Cotton and either Walters or Ertz," he explained. "The man that's left will be glad to renew, with Mr. Downey's other shares as security."

The Bribe of Power and Opportunity—Loyalty Throws Away the Game, But Wins It.

The big man grimaced.

"Don't, Blake," he ordered. "You make me giddy. Remember I'm new to high finance.

"Seriously though"—he swung erect with a snap, mouth and jaw congealing to granite—"this is what I'll do. I'll buy *all* of Downey's stock at 160 and take over your note besides. That will fix him up, give him eight thousand profit and eliminate the only uncertain element I've seen in the business. You'll get what you want most—a free hand and what money you need."

Matt shook with excitement. Given this man for partner, with his spirit, his wisdom and his quarter million dollars to draw upon, he could carry the war to the Kelseys, could enlarge and re-equip the plant, treble output, cut costs and dominate the field where now he held only a license to fight. All that his program for ten years held, Mr. Sperry tendered off hand. And over against this vision stood only the ousting of Mr. Downey and the shattering of his dream.

Wrestling, he found himself.

"No," he croaked huskily, "That would be fine for me, Mr. Sperry, but it won't work out. I can't dump Mr. Downey."

The banker's "Why?" crisp, menacing, was the first word of a debate interminable for Blake. It was logic against loyalty. All the facts were with the older man. When he had sketched the origin of the business, the friendship running back to his pinafore days, the generous basis of the partnership, the opportunity afforded him, the risks involved for Mr. Downey, and the crushing effect of defeat in the latter's lifelong ambition to produce big tile, Matt had exhausted his case. While Mr. Sperry clinched his argument by contrasting Blake's scruples with his partner's willingness to surrender the factory and deliver him in irons, to the Kelseys.

Even Mr. Downey's proposal to divide his premium, quoted by the young man, scored a point for the banker. Selling to Mr. Sperry, Mr. Downey would clear eight thousand dollars as against five thousand, plus new liabilities, the other way. And always and above all, the business would be saved.

But Matt was beyond conviction. In a lull in the long wrangle he ranged back to the starting point.

"You need only a third to control," he urged hopefully. "As our banker—" he grinned—"you come mighty close to controlling right now. We'll not quarrel, any more than Mr. Downey will interfere with our plans. You don't need the income very desperately. So why not let him keep his third interest and his pride as a big-tile maker?"

"If this were to be your main business, I'd not try to persuade you. But it's only a side issue—a good investment—a tremendous kindness to me—a stroke to conserve the interests of the county and the town. With him, now, it's a dream realized after thirty years—his life work—success or failure—the only thing worth while. Can't you see I'm bound to fight for his hand—bound to quit or go on with him whichever way you decide?"

"Sentiment! pure sentiment!" Mr. Sperry growled. "Why can't you stick to facts, Blake?" Denouncing it, however, he felt the lure of this loyalty, discovered hunger for it in himself. After all, this young fellow's fantastic program was practicable. Better one-third of an enthusiasm-driven business than sole ownership of one moribund. As for control—his teeth clicked on a vow to hold the reins.

"Have it your own way, then," he conceded. "Hustle out now, and get Mr. Downey on long distance and tell him to send Cotton to Gehenna. Tell him I'll give him 160 for half his shares. Tell him you'll pay his note tomorrow and that I'll fix him up with my friend Walters. Tell him—oh, tell him the luckiest investment he ever made"—he thrust out a huge hand, his face suddenly aglow—"was in *our* partner!"

The End.

Note—"The Boss and the Business" originally appeared in "System," the magazine of business, as a series of independent short stories. The publication rights have been purchased by us and the story revised, enlarged and continued to a dramatic climax by the author especially for "Brick and Clay Record."

WHERE THEY MAKE "LIZARB" BRICK

Brazil, Ind., Recognized as Leading Clay Center of the Middle West—Rope Drive Successfully Used—Fancy Face Brick Chief Output of Brazil Clay Co.'s Plant

Indiana, rich in many natural resources, has attained a world-wide reputation for its output of literature, coal and clay products. Formerly the making of literature and mining of coal took the lead but in the past ten years much progress has been noted in the clay industry and it bids fair to eclipse the former two in importance and value. Government statistics for 1910 give Indiana the sixth rank in importance and value of its clay products, the total annual output being valued at $8,100,010, showing an increase of $956,704 over the valuation for 1909.

Brazil, Indiana, with its nine large plants and unlimited quantities of fine clays and shales, has come to be recognized as the leading "clay center of the Middle West." In the making of fancy face brick it has established a reputation which reaches from ocean to ocean, many important buildings on the Pacific and Atlantic coasts having been constructed of Brazil face brick.

Among the popular favorites with architects and builders are the iron spots, buffs, grays, salt glazes and the rough texture brick made by the Brazil Clay Co. at its plant which is situated one mile west of Brazil on the "Old National Road." This plant lies in attractive surroundings, set far back from the main road and is reached by a private thoroughfare. It has splendid shipping facilities, being served by the Vandalia and C. & E. I. Railroads and also by the Terre Haute and Indianapolis high speed interurban road.

The company owns about 150 acres of land, which provides an abundance of fine fire clay and shale. The fire clay is of a fat nature, extremely plastic and of a light gray color. This is mined on the premises at a depth of 110 feet and is elevated to the tipple, where it is automatically dumped and carried to the dry pans, of which the company has two of the Bonnot make. The clay is not touched by human hands from the time it leaves the bottom of the mine until it comes from the brick machine.

The company very rarely stores its clay except about 150 tons, enough for a day's run should a mishap occur. The clay is tempered in a horizontal Bonnot pug mill and the stiff mud system is used. The brick are cut by an automatic twenty-four-brick cutter of the Freese type. The company also uses three Bonnot represses for the manufacture of its excellent grade of face brick. Three men are employed on each of these machines. Three hundred and fifty dryer cars with a capacity of 600 brick each are used in the dry tunnel, and practically all of them are of the company's own make.

View of Main Building of Brazil (Ind.) Clay Co.'s Plant Showing Clay and Coal Tipple at Right.

The dryer consists of twelve single-track tunnels, each holding sixteen cars, and is supplied with waste heat returned from the kilns by a Crawford & McCrimmon fan, about seventy-two hours being required for drying. The plant has sixteen down-draft kilns thirty feet in diameter, and the Boss system of burning is employed, the company finding it to be a very economical and uniform method.

The brick are set 32 to 35 feet high, coal being used for water-smoking and burning, all kilns being of the solid floor type.

Rope drive affords the means of power transmission in this plant and has been used successfully ever since the plant was started. The company is loud in its praises of this method of transmission and claims it would use no other, as no trouble of any kind has been encountered since the installation of the system. Of course, special grooved pulleys are necessary which are more expensive than the flat-faced pulleys, but the absence of trouble such as tearing out of lacing found in leather belts more than atones for the initial extra cost. Then, too, the rope drive is easily repaired and if one strand should break it can be easily repaired or replaced with but a small outlay of time and money.

Thos. Rouse, Manager of the Brazil (Ind.) Clay Co., "On the Job."

The company manufactures many grades of fine face brick, including light and dark flashes, iron spots, buffs, grays, salt glaze and the popular rough texture brick, which are called "Lizarbs."

Thomas Rouse is manager of this plant. He has been identified with the company for many years and is always on the lookout for something new and original in brickmaking. He is very widely known in the clayworking industry of the country, and his genial manner and pleasing personality have won for him a host of friends. He is ably assisted by John Zellers, who is in charge of the engine and machinery and who manages the plant during the absence of Mr. Rouse, who does considerable traveling and who incidentally closes many contracts for the excellent brick manufactured by his company.

Portion of Kiln Battery at Plant of the Brazil (Ind.) Clay Co.

It would really be a difficult matter to enumerate the many varieties of brick being made by this concern, as additions are constantly being made to the line so far as shapes and sizes are concerned. A good supply is kept in stock, so that there is little delay in shipping on receipt of order.

The Brazil brick are growing in favor throughout many sections of the country, because of the uniformity of their construction, handsome appearance and the absence of any flaws found in a great many face brick. The writer particularly noted that a great many of the public buildings as well as office and manufacturing buildings in Terre Haute, Ind., were constructed from the products of the Brazil Clay Co., and these buildings were by far the handsomest of any in the city.

The officers of the Brazil Clay Co. are: William M. Zeller, president; J. H. McCelland, vice-president; W. J. Snyder, secretary-treasurer, and Tom S. Rouse, manager.

SOUTH OPENS UP A NEW MARKET.

Clay, Suitable for Pressed Facing Brick, Heretofore Found in Limited District, Discovered in West Virginia.

Clay, suitable for pressed facing brick, has been found heretofore in a comparatively restricted district, represented by a few states in the East and Middle West, but, according to the Charleston, (W. Va.) "Gazette," an almost inexhaustible supply of the rare material has been found near that city, and the pressed face brick trade is viewing the situation with interest.

The new bed is just outside of Charleston and already a large plant is under construction, a portion of it being sufficiently completed to permit of a small daily output.

"It is a well-known fact among practical brick men that only clay of superior quality can be utilized profitably in the manufacture of pressed facing brick," says the Charleston Gazette, in speaking of the new clay beds. "Compared with the size and number of districts supplying the wire cut article, their area is comparatively limited. Various districts in the states of Pennsylvania, Ohio, New Jersey and that of St. Louis have long been famous the country over in the trade and have heretofore supplied the bulk of the pressed facing brick used throughout the entire country and even in Canada.

"Nature, however, does not appear to have favored the south to any extent with high grade clays suitable for pressed brick, but interesting developments may be expected, it is reported, from the vicinity of Charleston, from which point shipments and samples have been made the past few months that have created something of a sensation, not to say consternation, in the trade, the product being of excellent quality, and of numerous attractive shades.

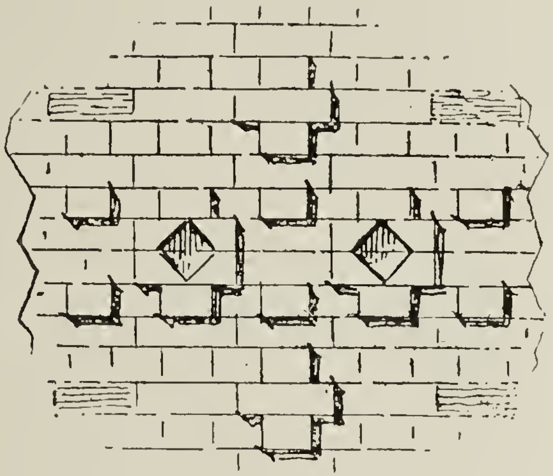
"The supply, however, thus far appears to be limited, but record prices were realized by the New York, Philadelphia and Chicago jobbers who handled the shipments, that have thus far found their way to these markets.

"High grade clays suitable for pressed brick, pottery, fire brick, etc., are known to abound in the "Pan Handle" state and if the new district is properly developed, owing to its strategic position as regards the eastern and southern markets, combined with cheap gas for burning, it is quite likely to cut serious inroads into the trade of competitive states."

MOLDED BRICK FOR ORNAMENTAL WORK

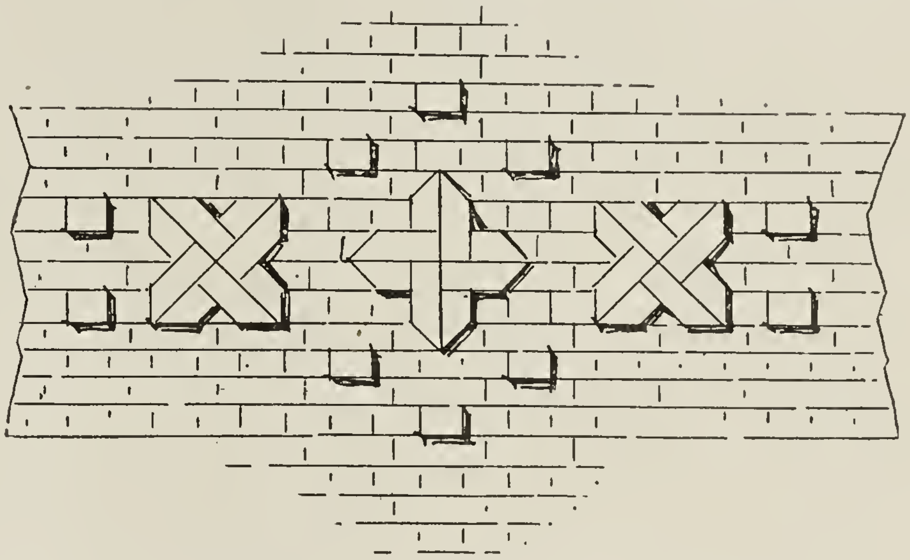
Picturesque Note Introduced in Brick Construction by Use of Molded Brick Combined with Attractive Methods of Bonding—Dispelling Hard Look of Uniformity

The use of the molded brick for ornamental work is one which has not been grasped as it should; nor have the still further possibilities of this particular accessory been adequately recognized. To-day we find the molded brick mainly utilized for cornices, stringcourses, or plinths; in the majority of cases by a more or less feeble imitation of Gothic, Classic, or Renaissance work, or a bad combination of all three.



Cuts loaned by "Contract Record".

Showing Use of Molded Brick for Gable Center.



A Center Piece in Splayed Brick.

It is not my intention to illustrate this article with examples in the above-mentioned positions. Combinations of individually-molded brick, forming such compiled features can be seen practically anywhere, although it requires a very thorough study of classic architecture to utilize to the greatest advantage such as are based on these principles. There are other positions where the molded brick can be most satisfactorily introduced, with more original and beautiful effects, to the advancement of ornamentation in this medium. Perhaps the principal one would be as an accessory in paneled work. Three or four of the commonest kinds of molded brick are shown in Figs 1 and 2. Taking these for a basis to work upon, their application to paneled ornamentation is shown by the succeeding figures. The first illustration in Fig. 3 shows the application of the splayed brick to small-pattern diaperwork of half-brick width, in raised and sunk work, with a half-brick spaced opening. The second illustration in this figure shows similar brick utilized for flush-faced patterns, or a simple sunk opening. These brick usually have a splay of 45 deg., and are readily obtainable at this angle, as also are the common triangular or pointed coping-brick for 4½-in. walling; these, backed together, form the centerpiece of the diaper.

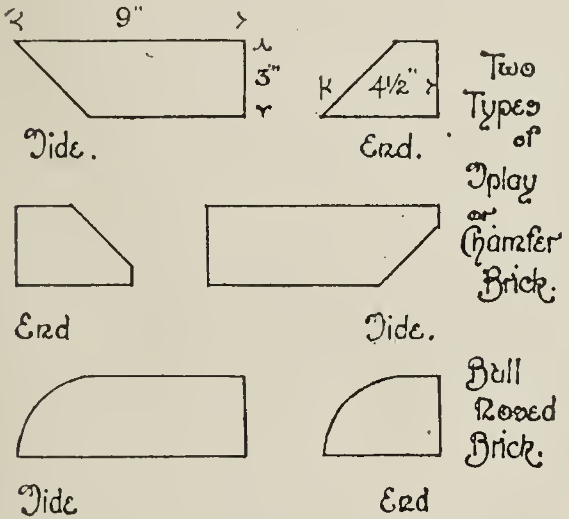


Fig. 1.

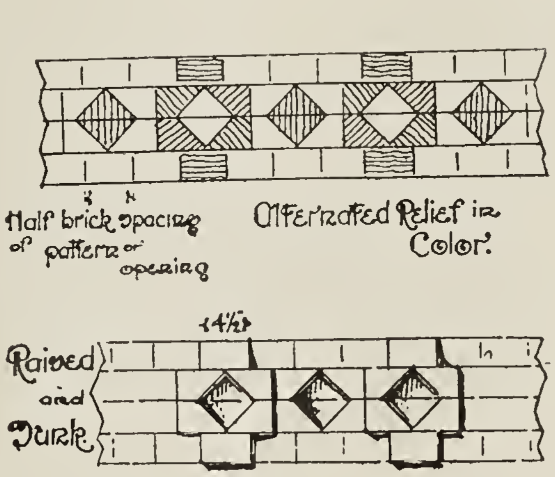

Half brick spacing of pattern or opening
Alternated Relief in Color.
4½
Raised and Sunk

Fig. 3.

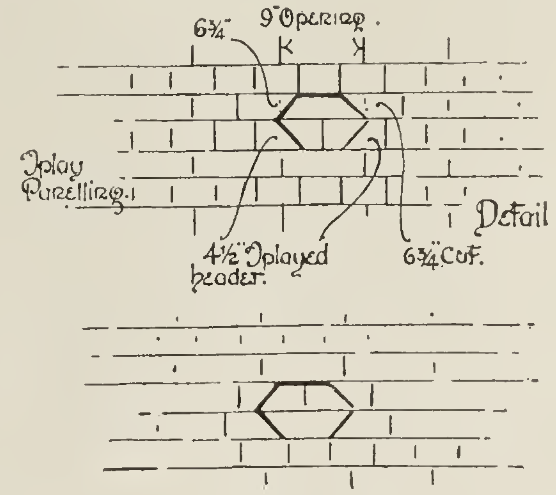


Fig. 5.

Here, at once, we have all that is requisite for the designs shown—in materials ready made to hand, obviating any necessity for cutting in their actual execution; whilst many of the other designs illustrated would require very little cutting in the way of specially-placed brick to obtain a different or an elongated pattern on the same principle. In studying out the latter it is essential to take one of the samples of moldings here shown, as applied to varying widths of panelling, as the same difficulties of jointing occur with any variety of the molded brick, when used in these positions. The next two illustrations (Figs. 4 and 5) show the same variety of brick used in the wider one-brick spacing; whilst the second illustration upon the latter figure shows a position to be avoided, on account of the bad weather-joint formed and which would in consequence, have a tendency to deteriorate quickly. As will be seen, it is necessary by this method to cut two or three of the brick and to obtain the continuation of the correct bond in the same course, without interfering at all with those over or under. Fig. 6 shows a method of using the brick in their entirety, without any extra labor of cutting at all. It involves, however, the introduction of stretchers in the positions indicated in the heading course, to pick up the bond, thus breaking the customary uniformity of this course to some extent. A Queen closer is also used, which helps to form the splayed brick panel, again breaking the uniformity of this course. One portion of the panel itself is formed by the insertion of the above mentioned pointed coping-brick if the double splay brick required in this position are not readily procurable.

Although it may be considered a disadvantage to break the correct uniform bond, as shown by this illustration, it is really not a noticeable point. The vertical jointing is broken correctly enough for all practical purposes, whilst the trifling lack of uniformity in the horizontal joints is quite unnoticeable in the general scheme, particularly from a distance, with the more powerful pattern formed by the panel itself as a foil. In many instances, though, the possibility of forming some species of ornament by way of relief, either in a continuous line or by grouping, thus saving the extra labor entailed by cutting, would prove a distinct disideratum. In all probability it will mean the difference of using some system of ornamentation or none at all. Fig. 7 shows the same-shaped panel adapted to one-and-a-half brick widths. The two courses forming the panels in the first illustration on this figure being mainly built with stretchers, gives a broader effect, more in keeping with the wider paneling. This course, is, therefore, picked out into stronger relief by the heading courses above and below. It is a method quite admissible in many positions for ornamental work of this nature.

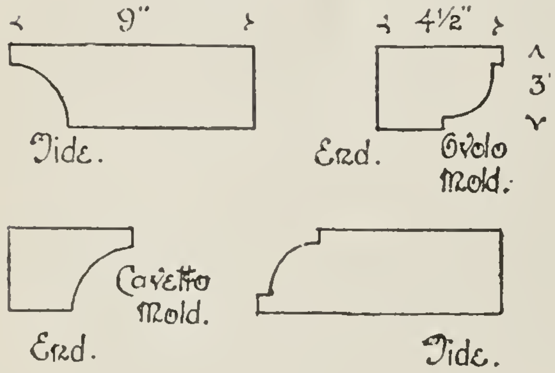
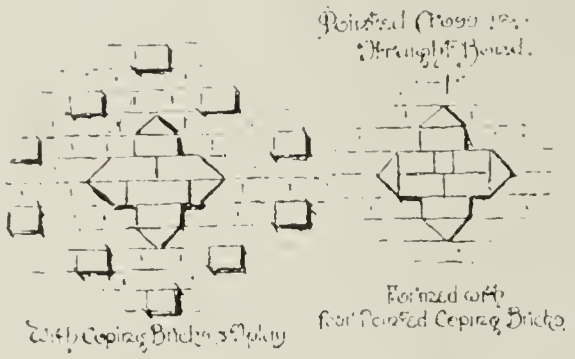
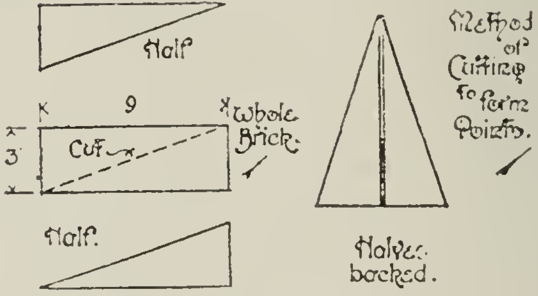


Fig. 2.


Pointed Cross in Straight Bond.
With Coping Bricks & Splay
Formed with four Pointed Coping Bricks

Coping Brick.



Method of Cutting Points.

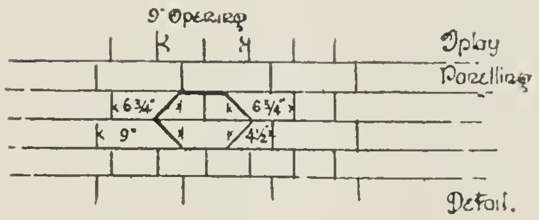


Fig. 6.

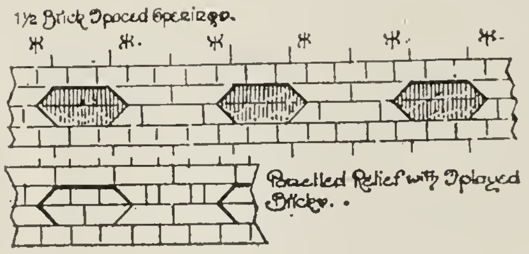

1½ Brick Spaced Openings.
Panelled Relief with Splayed Bricks.

Fig. 7.

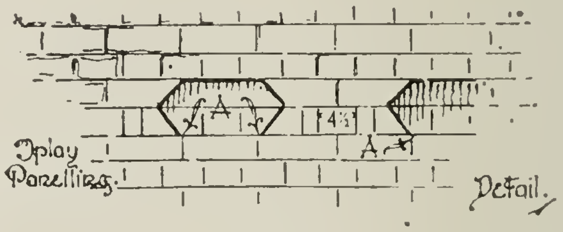


Fig. 8.

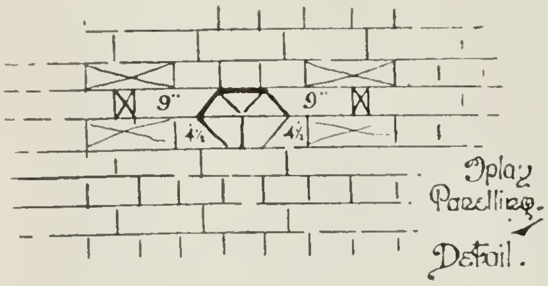


Fig. 4.

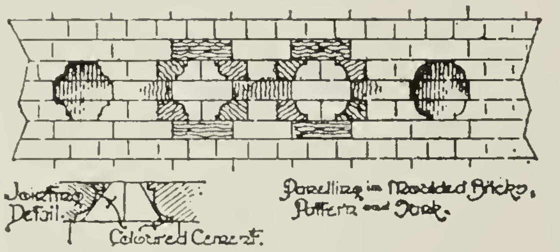


Fig. 13.

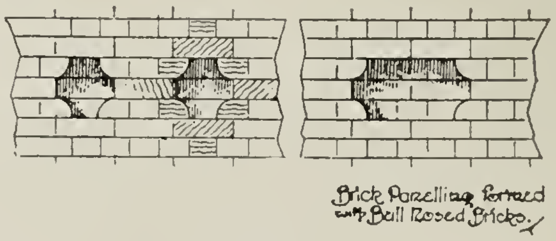


Fig. 12.

In the endavor to introduce regular alternate coursing, with the least amount of cutting, and that only in two of the panel brick, a couple of Queen closers are used, as shown by the second illustration on the same figure. There is the same point to be noted in this illustration as mentioned previously, viz., it should not be used in the reverse position, as shown by Fig. 8. The weak jointing at AA, immediately off the splay, would have a tendency to perish quickly. Figures 9 and 10 show this panelling applied to a two and a two-and-a-half brick opening respectively. As will be seen, this principle of panelling may be applied to any length; although it requires care and methodical working out for correct brick treatment in the matter of breaking vertical joints. Any type of molded brick suitable for such angle positions may, of course, be adapted to this work, besides the splay or any of these shown. Fig. 11 illustrates the use of the same brick in other methods of panelling. Showing the effects obtained by color relief, sunk, and raised and sunk coursing. The bull-nosed, cavetto, and ovolo brick, adapted to these positions, afford a more ornamental, and therefore pleasing relief in this class of work, as will be seen by referring to Figs. 12 and 13. A great consideration in favor of the splay brick for this ornamental work is its adaptability to the interior bonding of the wall, so far as it is necessary for such brick to be let in. With molded brick built into a wall, their ends showing in this manner on the face for ornamental purposes, the customary clean, perfect jointing is, of course, impossible without a good deal of expense, either by rough rubbing or having a reverse brick to fit. It is just possible that a ready-made molded brick might occasionally be found to answer this purpose and suit the position better than adapting the splay brick. As shown by the detail in the last illustration, the joint is raked out and pointed with colored cement putty to match the ground, the cement being tinted with brick dust, ochre, or in the event of dark colors, ashes, to obtain correct tone. Fig. 14 shows the use of small, sunk, or patterned panels, as illustrated above, when arranged in systematic and symmetrical groups to form a still larger central or intermediate pattern. Fig. 15 also illustrates how a little raised and sunk ornament so applied can be varied and massed for a central feature, such as a gable or other positions, for instance on a line of ornament. Fig. 16 is again another departure in this style, the two diagonal cross-reliefs being formed somewhat on the principle of herringbone brickwork. The center one, although an innovation in the use of upright brick, forms a strong relief upon the wall face. Some features could be easily arranged in the outer half-brick facing to a wall of sufficient thickness to admit of their use, without really being at all unsound constructionally, any more than the rest of the work. These patterns are readily formed by means of the splay brick and pointed coping.

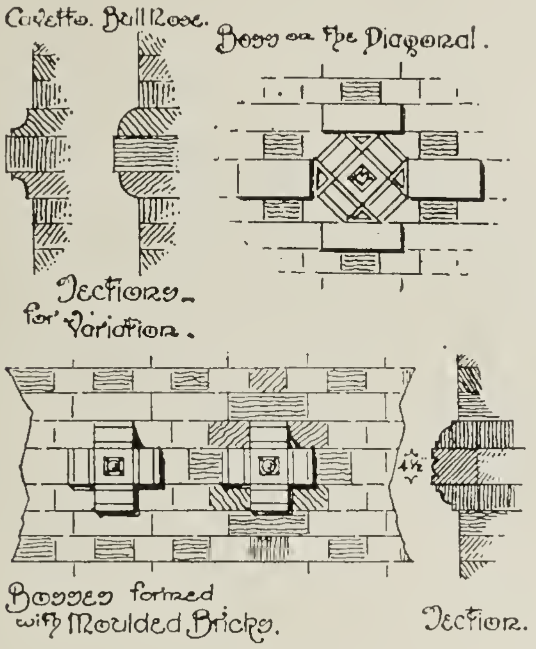


Fig. 20.

The two illustrations in Fig. 17 show different methods of bonding and construction for the upright cross—shown in the preceding example—in the ordinary straight coursing of wall construction. They also illustrate how different effects may be obtained even in similar figures, by variation of the bond. This is, apparently—perhaps to the casual observer—an exceedingly slight point, scarcely worthy of note. However, though apparently slight it is one worthy of particular attention. It is by such variations as these that the customary cast-iron mechanical, machine-made appearance conveyed by the majority of regular uniformly-laid modern brickwork may be broken up. Methods of inequality in alteration, are required to effect this; the harsh, hard air of complete uniformity is so dispelled, introducing the spirit of picturesqueness. These points are well worthy of consideration, and should be studied out more in detail with regard to other examples illustrated in this work when actually applied. Fig. 18 illustrates a slightly more elaborate although not difficult, piece of work, on somewhat similar lines to the two former figures. It is also formed with splayed and three or four-pointed coping brick, there not being any cutting required at all, although such hardly appears to be the case at first glance, with an apparently complicated piece of work. The various dimensions figured upon the sketch are quite self-explanatory with regard to this point. A correct, star-shaped ornament can be further formed by cutting away to the dotted lines shown by the upper left-hand portion of this figure, or by cutting a brick diagonally, as shown in Fig. 19, and backing together the pieces so obtained. The latter method, though, involves considerable labor in cutting, not merely the points alone, but grounds as well, which also have to be considered.

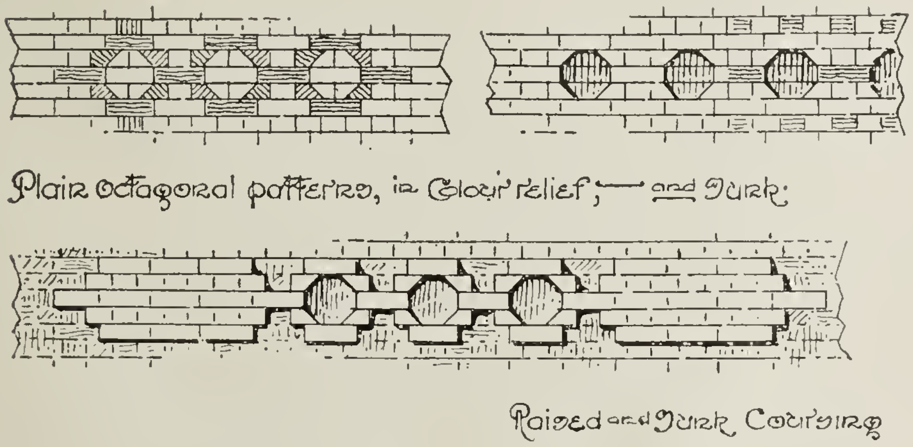


Fig. 11.

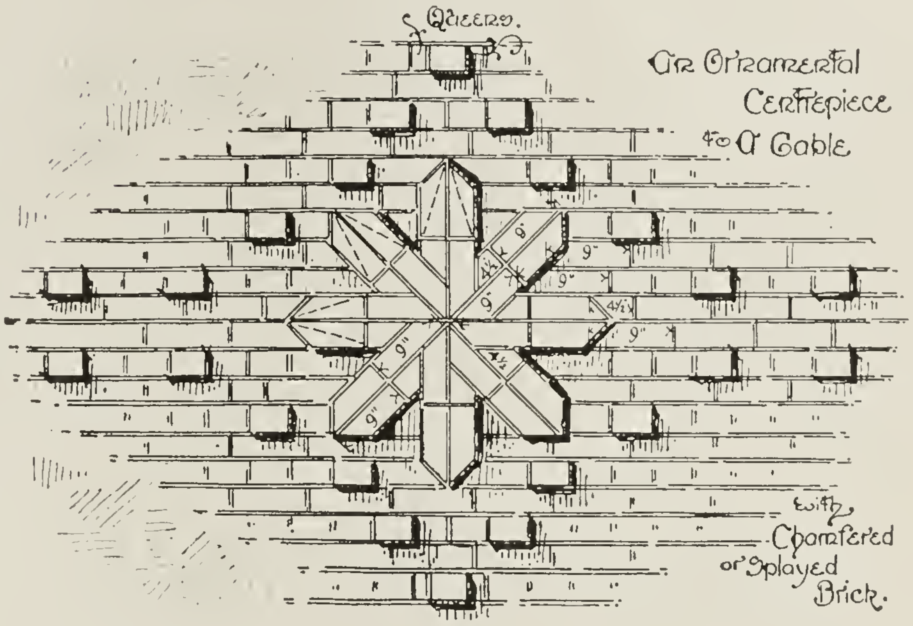
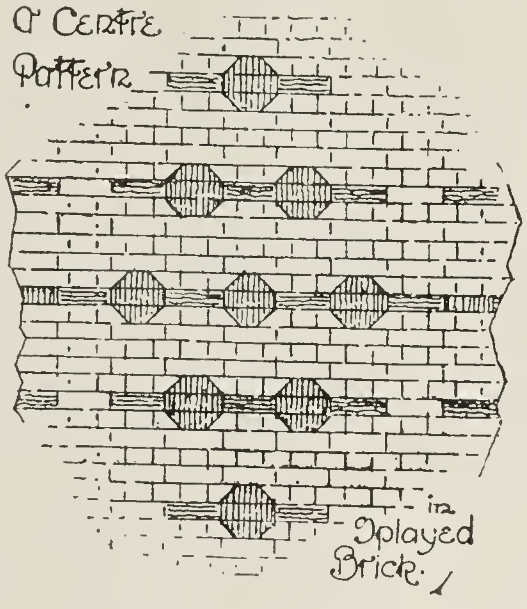

Queens.
An Ornamental Centrepiece to a Gable
9"
4½"
with Chamfered or Splayed Brick.

Fig. 18.

Yet another position in which the molded brick may very often be satisfactorily used—the formation of bosses—as illustrated by Fig. 20. It will be seen that these involve running a wider center-band in the coursing, formed by brick on edge giving a 4½-inch face. The effect obtained, breaking up the uniformity of the crossing.



Example of Splayed Brick.

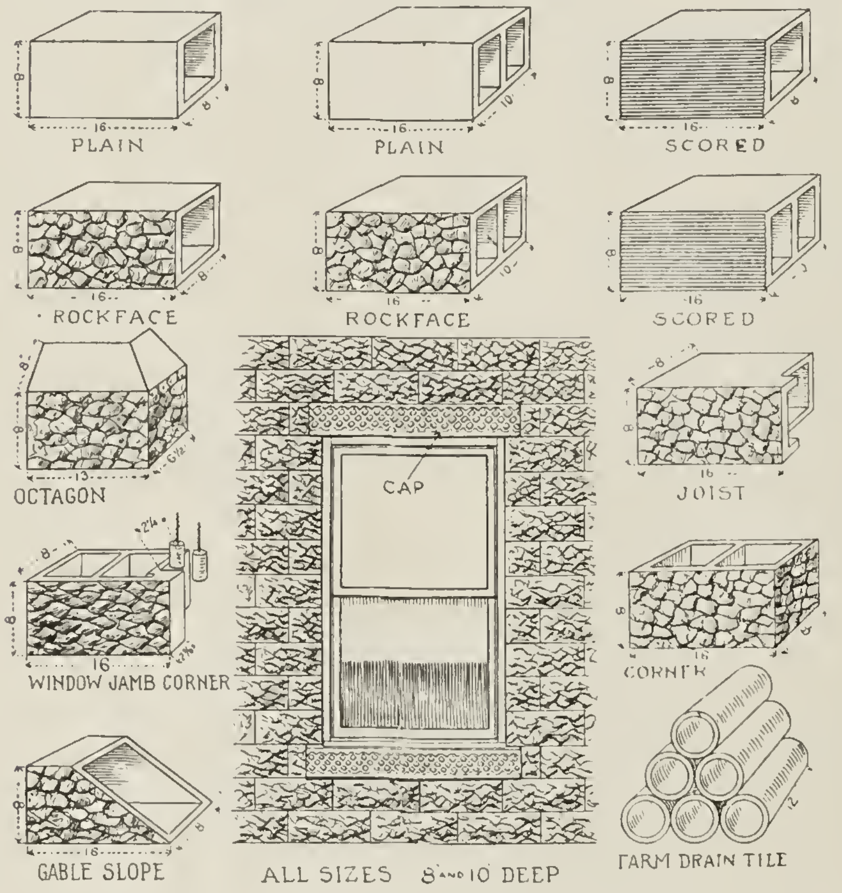
In the study of materials and their application it should be one of the first duties of the architect to find out what can be done with them. Utilizing such individual materials is an advanced manner for ornamental purposes, when the nature of the work, even if only by moderate financial possibilities, admits of so doing. Not to obtain cheap stereotyped ornamentation by means of, and the introduction of, other and foreign materials to that in which he may be primarily working for the time being—Building News.

CANTON HOLLOW BLOCK

Ohio Plant Makes Many Varieties of Hollow Building Block Which Make Altractive Foundations—Churches Not Infrequently Built of this Material

Although the Canton Hollow Tile Brick Co. was formed in 1894 in Ohio, and erected a plant at Canton, Stark county, N. C., the company removed from there to New Bethlehem, Pa., in 1899, where it has been in business since. The plant at Canton, O., was sold, and since has been razed. This company is under the management of the three "Lower boys," who devote their entire time to the business. Mr. George W. Lower is president of the company and Charles M. Lower, vice-president and general manager, and Ira E. Lower, secretary and treasurer.

The plant is located on the Pennsylvania Railroad, and the company has 188 acres of land under its control. Underlying the land, is found plastic fire clay and shale, averaging 5 to 35 feet in depth. The clay is obtained from the banks by shooting with dynamite. At the thickest part of the bank, from four to eight feet from the top, soft clay is found; below this, from 8 to 12 feet down, shale is obtained, and underlying that, from the lowest point down to a depth of about 12 feet, an extra good plastic clay is otbained. All these clays are used, and when mixed an extra fine hollow block is obtained.

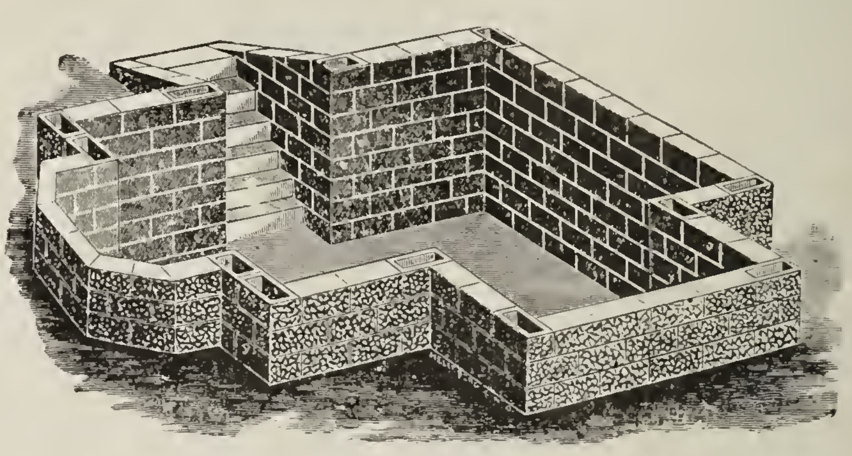


Variety of Styles in Hollow Block Manufactured by the Canton (O.) Hollow Brick Co.

The clay is shoveled on cars and pulled up an incline, one horse and one mule furnishing the "power" for this purpose. At the end of the tipple, the loaded car is sent down the three-track incline, and the empty car is then pulled to the top of the bank, from where it is drawn by "horse or mule" to the bank. The clay is used as mined, it being first dumped into a 40-foot square bin, and used from there as required, daily. The plant has a capacity of 20,000 block per week.

Among the machinery used in the preparation of the material and the manufacture of the ware, is a piano-wire screen, made by the Louisville (O.) Machine Co., and a dry pan and pug mill of the Bucyrus type. Water is used in the mill, and the clay is "soft mud" when molded. The elevator extends from the dry pan to the roof. One hundred and fifty drier cars are used for loading the block and a Bucyrus transfer car is used, two turntables being built in the tracks.

A 40-horsepower Bessemer gas engine is used here to force the heat from the kilns through the dryer. Block are put in one day and "pulled" the following.



Ornamental Cellar Wall Made of Rock Face Hollow Block, Made by the Canton (O.) Hollow Brick Co.

The kiln battery is composed of 10-round, 24-foot down-draft kilns. The block are set five high, each block being 16 inches long when burned, the fuel being natural gas.

Power for operating is supplied by a 125-h. p. Corliss engine and two 80-h. p. boilers of the Gem City Boiler Co.'s make, made at Dayton, O. Only one boiler is required, when gas is used. When coal is required, both boilers are "put on."

Grace Evangelical Church, Freeburg, O., Built of Hollow Rock Face Block Made by the Canton (O.) Hollow Block Co.

The plant is kept in operation from 10 to 11 months during the year, the entire product of the plant consisting of plain and rock face vitrified building block, scored stucco block, window jamb corners, drain tile, hollow cellar pavers and steps, the largest portion of the ware being salt glazed.

STRAIN MEASUREMENTS OF BRICK PAVEMENTS*

Physical Tests of Brick Pavements—Effects of Street Cars and of Temperature Variations—Measurable Depression Ten Feet from Track.

By James E. Howard, Engineer-Physicist, Bureau of Standards, Washington, D. C.

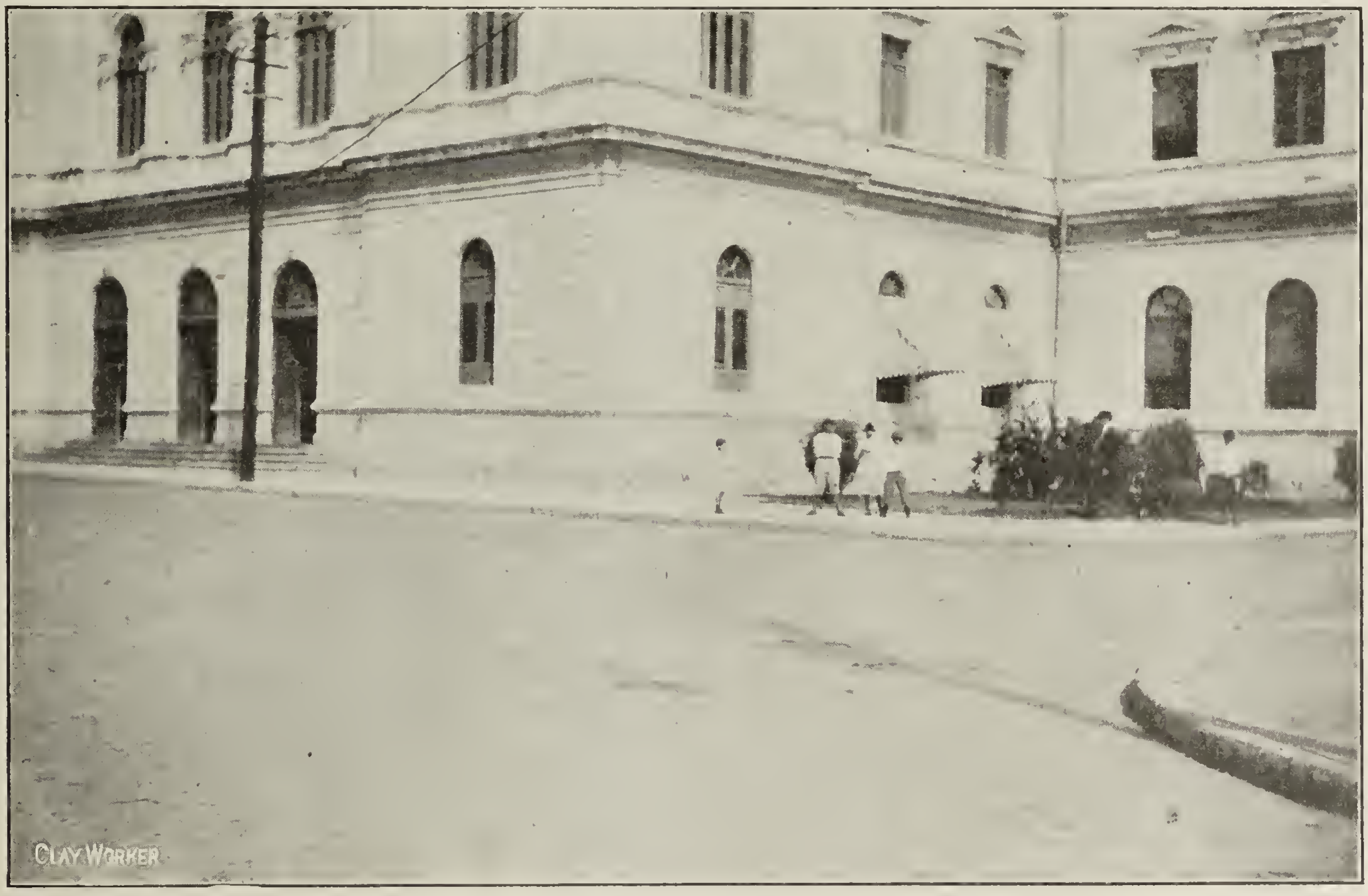
A material of superior properties for street pavements is present in the vitrified paving brick of current manufacture. Such excellent qualities have been reached that attention is necessarily attracted to this valuable clay product. The manufacturers of paving brick have done their part in a commendable manner and produced a paving material which has a crushing strength comparing well with strong natural stone, and which exceeds that of many varieties.

A well made paving brick possesses high resistance against abrasion, it is nearly impervious to moisture, in which respect it presents an important sanitary advantage, and furthermore it is attractive in appearance and beautifies a city where it is used.

The mechanical features of manufacture are under such control that regularity of form is secured and with that follows the opportunity of securing a pavement with an even surface, a feature of decided economic importance considering its bearing on the tractive force required for transportation purposes. The necessary material for manufacture seems favorably distributed in many States. From the manufacturing end the problem of producing a satisfactory paving material has been well solved.

The question now appears to be an engineering one to ascertain the manner in which the useful properties of paving brick can best be utilized. The engineering side of the question, however, is a broad one directly concerning the welfare of many communities.

The Bureau of Standards in the performance of its regular functions pertaining to investigative tests of structural materials has inaugurated tests on paving brick in place in the pavements. Laboratory tests on the properties of brick have been carefully made many times and in many places, the results of which are familiar to all. The present tests are intended to extend information to the behavior of the brick as found under service conditions, measuring the strains which are developed in the pavements themselves and from the deformations judge of the stresses or loads which are involved.



Brick Paved Plaza in Front of National Theatre, Panama.

Conditions in a pavement are complicated, and in approaching the subject it is essential to make a careful analysis of the case, ascertain and define what the elementary features consist of and so shape the work that one feature after another may be taken up and investigated. Nothwithstanding the apparent complexity of the subject it nevertheless admits of being resolved into elementary factors and each in sequence made the object of experimental inquiry.

Some preliminary work was done a year ago at Indianapolis. It has since been extended at Cleveland, during which the bureau has had the co-operation and aid of Mr. Will P. Blair, secretary, and other members of the National Paving Brick Manufacturers' Association, also officials of the cities of Cleveland, East Cleveland and Lakewood.

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*Reprint by permission from the copyrighted proceedings of the twenty-sixth Annual Convention of the National Brick Manufacturers' Association at Chicago, Ill., March 4 to 9, 1912.

The work in those cities has been directed toward acquiring data upon the relations of the street car tracks to the pavement and upon the effect of variations in temperature in stressing the pavement. These questions are quite distinct from those which relate to the supporting capacity of pavements against heavy wheel loads, or durability in the matter of wear or surface abrasion. So many streets furnish successful examples of pavements which have carried heavy traffic for a term of years that it was not thought necessary to include such observations at this time.

The tests on the relations of the street car tracks to the pavements consisted of measuring the elastic depression of the track under the weights of cars and acquiring information on its influence on the adjacent pavement. The elastic depressions of the rails were measured on different types of tracks, selecting among the number places where maximum rigidity was likely to prevail.

In general it was found that the vertical elastic movement of street car tracks, that is difference in level of the rails between a loaded and an unloaded state is greater than can be followed by a monolithic pavement without the formation of cracks alongside the track. Occasionally, a track in the very best condition may not display excessive depression, but the uncertainty of maintaining such a state renders it hazardous to make a bond between the pavement and the track.

There is in addition to the momentary elastic depression a bodily settlement of the track resulting from insufficient support of the roadbed. Such settlement when it occurs involves a permanent depression altogether too great to consider in connection with those lesser movements which we are now describing. The bodily settlement of the car track, however, is a feature which cannot be left unmentioned. Cases are so flagrant at times that a good pavement can hardly be made use of by reason of the ruts of the trolley tracks.

In these tests the sensitive leveling apparatus employed in the observations was such that the presence of a trolley car could be detected by the depression which it caused even in the pavement at a distance of ten feet from the track in the direction of the sidewalk. Such an observation was made on a relaid pavement in which a tar filler had been used, and substantially at that distance with a cement filler, or from 10 to 12 feet away.

At the intersection of two streets, where no trolley tracks were present, the depression caused by the weight of a man was detected at a distance of 12 feet. This observation was made at a place where the hollow rumbling sounds of passing vehicles indicated the pavement did not rest upon the sand cushion or foundation. It was noticed that the pavement at the crown of the street responded more promptly in respect to change of level to a load coming upon it from the side rather than along the center line of the street.

Pavements are elastic as the properties of the individual brick and the cement filler would indicate, but the amount of transverse bending which a brick or a cement grouted pavement will endure without cracking is very limited in its extent. This is particularly the case when the material is strained in tension. A wider elastic range prevails for compression loads, substantially in the ratio of the compressive to the tensile strengths.

Concerning the effects of changes in temperature on the integrity of pavements, data were acquired by the method of strain measurements, a description of which method was presented at your last annual meeting. Gauged lengths of 20 inches each were established in the pavement, in number exceeding 300. It has been found feasible to measure these gauged lengths with an accuracy, commonly to the nearest ten thousandth of an inch. In this manner thermal changes may be followed very closely.

Gauged lengths were located at the sides and at the middle of the street, in both crosswise and longitudinal directions. During the time in which these strain measurements have been in progress a range of pavement temperatures of 66 degrees F. has been experienced. Figure No. 1 illustrates some of the results which have been obtained, those here entered referring to measurements on Euclid avenue, on a section of the pavement just east of University Circle, Cleveland.

In general the expansions or contractions of the crosswise gauged lengths proceeded with greater regularity than the longitudinal movements. Modifying conditions influenced the longitudinal movements and a drop in temperature yielded results which showed normal contraction on some gauged lengths, on others a very slight change, while certain of the measured lengths, those spanning cracks in the pavement, were longer at the lower temperatures.

It was found that transverse cracks which opened with a drop in temperature did not always entirely close again, but displayed a tendency to progressively increase in width. Probably that was due to fine particles of sand and abraded material of the pavement lodging in the open fissures. A repetition of the process caused a progressive lengthening of the pavement. During a period of 52 days one set of measurements showed the combined effect of decrease in temperature and progressive increase in width of crack amounted to .0395, practically four hundredths of an inch. This occurred on a pavement which had been laid about four months. The crosswise gauged lengths on the same street and during the same period of time contracted regularly with, lowering of temperature, the maximum amount observed being .0039.

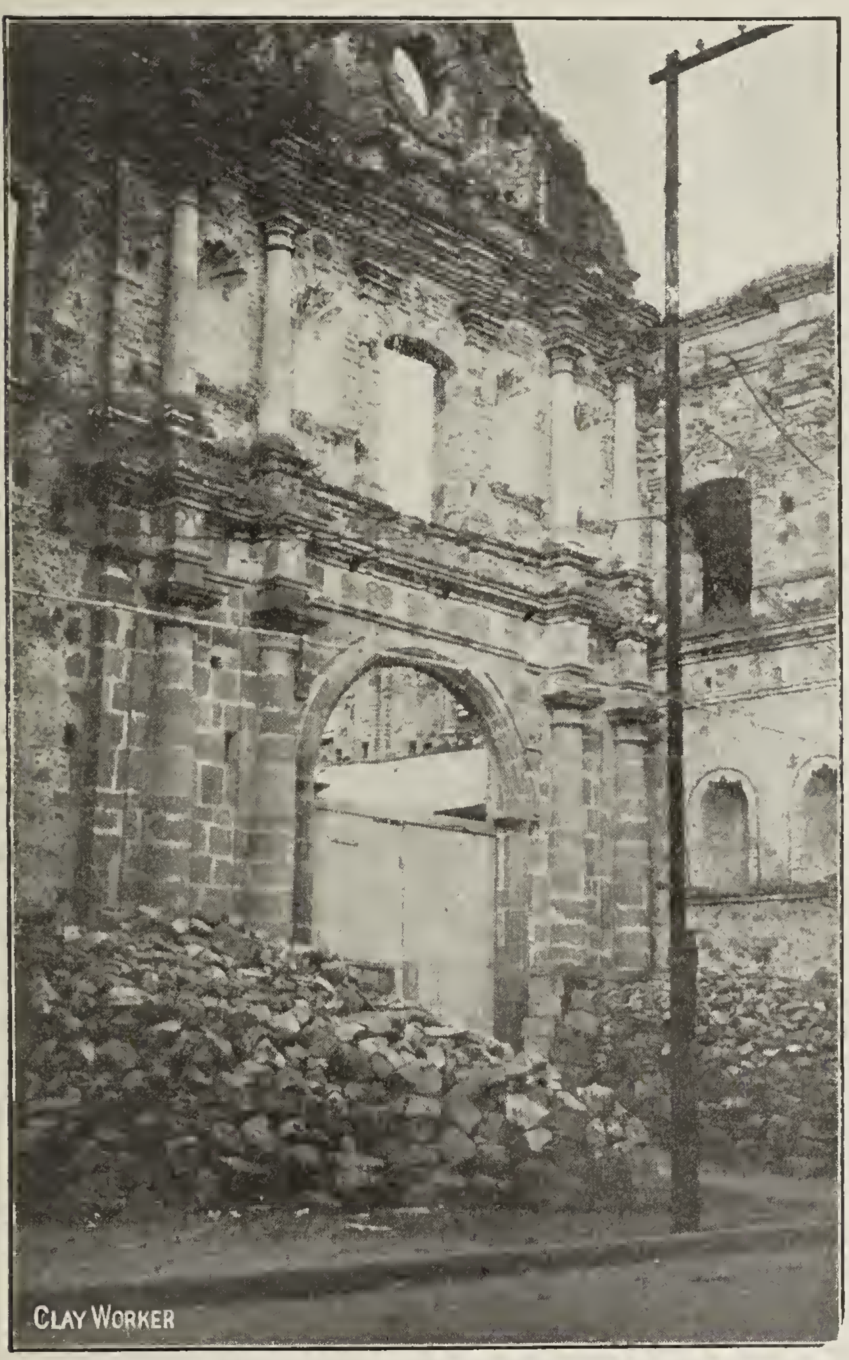
A number of earlier determinations on the coefficient of expansion of building brick gave a value in the vicinity of .0000040 per degree F. This value seems to fit the present tests fairly well. The observed changes were somewhat less than called for by the above value of the coefficient, but the actual range in temperature of the brick was not ascertained with precision. Surface temperatures of the brickwork were used, and not unlikely the range in mean temperature was less than the recorded amount.

Taking the observations as they were made, the contraction of the 40-foot roadway of Euclid avenue, for a range in temperature of 100 degrees F. was 0.1043 and 0.1101 respectively at two sections of the roadway. The contraction called for on the basis of the above mentioned value of the coefficient would be 0.1920. That is the total amount, one-half of which might be considered as affecting each side.

During sunny days the temperature of the pavement naturally goes considerably higher than the temperature of the air a few feet above it. Observations on this feature showed a difference of 38 degrees on one occasion. The temperature of the air was, on the day in question, 64 degrees, four feet above the pavement. On the pavement in the shadow of the curb it was 69 degrees. In a freshly drilled pocket for a reference pin, on the sunny side of the street, the temperature was 85 degrees, while in the sun at the angle of the pavement and curb the thermometer rose to 102 degrees.

In the laying of a cement grouted pavement a critical period is encountered at the very outset, during which care must be exercised just as in every cement structure, in order to avoid the formation of incipient cracks before the cement grout has had time to set and acquire strength. On account of the excess of water used in making grout the setting is much retarded and several days may elapse before a substantial degree of hardness is acquired.

During this period the pavement should remain at a constant temperature, if it were possible, day and night. A drop of 20 degrees calls for a contraction of about one-tenth of an inch in a length of 100 feet. It is a fortunate circumstance in laying a pavement when a minimum range in temperature is experienced during the first 48 to 96 hours after grouting. Incipient cracks have been developed at a very early period following the grouting, resulting in injury to the street even before it was opened to traffic. Hot, sunny days followed by cool nights are menacing to freshly grouted pavements.



Flat Brick Arch in Ruin of Old Cathedral at Panama Which Has Remained Intact About Two Centuries.

Transverse cracks have been started, which ultimately extended across the street, by the influence of the end joints of the edge stones against which the pavement was laid. The usual manner of laying pavements, with joints broken in one direction only, affords favorable paths for cracks once started to extend from curb to curb.

Recently an opportunity was furnished for inspection of the streets of the city of Panama, where brick pavements, cement filled, have been laid from five to six years. The pavements were without expansion joints at the sides. There are no street car tracks in Panama.

The pavements are in very fine condition. In one place only were cracks of any kind noticed.

At Panama the temperature is quite high throughout the year, and while the nights are cool still the drop in temperature is not great. It is believed that equable thermal conditions have contributed toward maintaining the integrity of these pavements, and that pavements in southern climates should in general be aided by the smaller range in temperatures over those experienced in northern climates.

In conclusion, the results now available point to the undesirability of bonding the pavements with street car tracks, excepting possibly those of the very best construction. Cracks parallel to and adjacent to the tracks are likely to develop if the pavement is called upon to follow the usual elastic depression of the rails. Obviously there can be no lateral thrust to the pavement if the rails are left free to depress.

The strain measurements show that transverse expansions and contractions proceed with greater regularity than longitudinal movements. A progressive change in length or creep of a portion of the pavement is due to alternate changes of temperature, open cracks being partly filled with abraded material and prevented from closing when a rise in temperature occurs.

Cautionary warning is found in the behavior of pavements which have developed transverse cracks in the early stages after grouting. At this time exposure to a wide range in temperature is undesirable.

Pavements are probably benefited by a certain amount of compressive stress in a longitudinal direction. Transverse cracks will be kept closed so far as possible, and if the compressive stress is not excessive spalling would not be induced. The open ends of paved streets, having no buttresses to take the thrust, may be expected to develop transverse cracks.

The minimum amount of crowning necessary to turn the water is advantageous to enable the pavement to resist compressive stresses without causing rupture during spells of sudden heating. Bends and reversed curves in streets are disadvantageous to the pavements.

A superior material is provided in paving brick of current manufacture, the use of which requires careful engineering skill, and it appears that questions pertaining to the effects of temperature changes are among those which require most prominent attention.

MOLASSES AS ROAD BINDER.

The Government Road Department is carrying on some experimental road work at Chevy Chase circle, Washington, D. C., with a view of using a by-product from sugar refineries, known as "black strap" molasses, which has been used for surfacing a stretch of road in Bradley Lane near that place. This molasses, mixed with lime water, forms calcium sucrate, one of the stickiest substances known to chemistry. When it is put on the road, it sinks in and its disagreeable odor is lost. This material, according to laboratory experiments has been found to have a peculiar binding effect with sand, so that in future, it is probable it will be used quite extensively for road surfacing.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. JULY 1, 1912 No. 1

THE BUSINESS OUTLOOK.

Despite an occasional croak from some pessimistic manufacturer, the present season is one of the most prosperous in the brick and clay product industry. Never before in the history of the country has there been so much building—so much construction work in which clay forms the basic material.

Reports from the Far West, from the East, from the South and from the Middle West tell of great activity in brick and terra cotta work. In Chicago, alone, the crowded loop district, which houses the lofty sky-scraper, is undergoing a transformation that will bewilder the occasional visitor. Old landmarks that have served their purposes for half a century or more are crumbling under the hands of the wrecker and imposing structures of brick, terra cotta and other clay fireproofing material are rising in their stead.

This same building activity is reported in St. Louis, in Kansas City, Mo., in Denver, Col., in Los Angeles, in San Francisco, in Portland and in Seattle. From the South, Memphis, Atlanta, Chattanooga, New Orleans comes the most optimistic news. From New York City, Boston, Baltimore, Philadelphia, Pittsburg and many of the other larger eastern cities comes the same encouraging news.

The brickmaker is profiting by this now. He is the man that is reaping the big harvest—but soon the other branches of the industry will feel the force of the prosperity wave. The brickyard man will need more and bigger machines. The tile and terra cotta man will want to enlarge his plant. Long-deferred improvements will be made; first, because the maker can afford it and second, because an even more promising season next year confronts him and he must have greater facilities.

The outlook is indeed rosy. "Brick and Clay Record" contemplates the future with the feeling that the clay industry is just beginning to come into its own.

Turn your back on the knocker. He is a detriment. He is a drawback to prosperity which is knocking at your door, Mr. Clayman.

BALTIMORE'S LESSON.

Baltimore has profited by the disastrous fire of little more than eight years ago. Never again will its citizens be confronted by the heart-rending spectacle they faced on that fateful morning in 1904. Never again will the municipality see the necessity of marshaling its people, and, Phoenix-like, rising from the ashes and the ruins of a conflagration that all but swept away every home and every business block in that historic city.

For Baltimore has builded well this time. She has seen the mistakes of the past. Forewarned, she has forearmed.

When the last dying ember had spent its force there was no hesitancy—no delay. Level-headed business men, confident of the future of the city, took onto their shoulders the stupendous task of rebuilding the city. There was no haste—no heedless rush. Builders and architects were drawn into a conference. No mistakes must be made. Baltimore must guard against the future.

Throughout the dark hours of this first homeless night these men planned and outlined the big idea. Baltimore must be fireproof. Baltimore must protect itself forevermore against the repetition of the awful holocaust.

Once determined what material should be used—what general plans should be followed, Baltimore set to work. From the ashes there rose many buildings as if by magic. And, with few exceptions, these structures—both business and residential, were made of brick and terra cotta.

What is the result? Today, Baltimore is a city of brick. Block after block of this fire-resisting, imperishable product of the pit beautify the city. Even the streets and avenues are covered with this durable material.

Baltimore has rebuilded sanely. With what confidence, what security, its people view the future!

IS YOUR HOME FIREPROOF?

Do you live in a brick house, fireproof throughout with tile floors in bathroom, kitchen and verandas? Is your barn built of hollow brick and are your driveways paved with brick? If not, you are losing a splendid opportunity to advertise your wares. If your out of town customer expresses a desire to see how your ware looks in actual use, what a gratification it would be to be able to take him to your home and show him what beautiful effects may be obtained by the artistic use of the many varieties of burned clay materials. If street improvements are being discussed, your driveway may be pointed to as an example of brick paving properly laid. If you don't build a fireproof home, you cannot afford to complain if your neighbor builds a frame "fire-trap." Example is better than precept—the American people are "from Missouri"—show them how to use burned clay materials to the best advantage and they will soon refuse to take substitutes. Facts—and the proof thereof—in regard to building materials, are what the people want.

NEW HEAD OF CERAMIC DEPARTMENT.

Mr. Henry Leighton A. B., formerly instructor in geology and petrography at the School of Mines, University of Pittsburgh, has recently been appointed Assistant Professor of Economic Geology at the University of Pittsburgh, and will also have charge of the Department of Ceramics.

STUPENDOUS FIRE LOSS.

Chicago's property loss from fires last year was $9,500,000. For the same period the fire waste in all Illinois was $11,000,000. In that same twelve months the United States saw approximately $250,000,000 go up in smoke. The average of the fire losses of the nation for the first three months of 1912 has been nearly $1,000,000 a day.

These were facts brought out in emphasis of the need for action at the opening of the sixteenth annual meeting of the National Fire Protection Association in Chicago May 14-15, to consider remedies for this condition. Among the remedies aimed toward the alleviation of the conditions was the continued encouragement of fire resistive building construction, and the adoption of suitable building codes by all cities and towns.

MILLION A DAY FOR ROADS.

It is estimated that one million dollars per day is being expended for public roads in the United States and that one-third of this sum is wasted on account of inefficient supervision of construction, graft and fraud in the furnishing of materials and the selection of pavements which call for extravagant maintenance changes. Brick pavement, properly laid, would result in the elimination of much of this useless waste.

In England, steps are being taken to make agreements with labor unions equally binding by the deposit of a money guarantee to insure the observance of any agreement which might be entered into to end a strike. This, however, would not always be effectual, since there is nothing but the assurance of the officers of the union to bind their side of the promise. A change of officers would mean a change of view and suspension of work in the face of a solemn agreement to prevent such an occurrence. However, if such money guarantees were put up in thts country, it would mean an improvement upon the present arrangements. There still remain many reasons why an "open shop" is a preferable arrangement, even though it is fairly assured that agreements will be strictly observed by each side.

Twenty-seven miles of street, mostly macadam, in the city of Philadelphia are to resurface during the present season at a cost of $200,000. If brick had been used, this expenditure would have been uncalled for.

The Michigan Manufacturers' Association is seeking to develop interest in the movement against graft in the sales and purchasing ends of the manufacturing business. The movement may be somewhat idealistic but it is worth while considering. There is no more room for the grafter in business than there is in politics.

Orders have poured in for additional copies of the special paying number issued June 15 by "Brick and Clay Record." A heavy demand was anticipated and preparations made to accommodate this, but the extra output was inadequate. In addition to the silent but expressive compliment contained in the letters ordering 500, 300, 200 and smaller quantities of the edition, the mails have been busy with laudatory letters from our subscribers and advertising patrons. To all of these we wish to say that "Brick and Clay Record" feels it is but maintaining its general policy of years—to give the best it has to the industry it represents.

It is possible, but not profitable, to make poor brick.

AMERICAN ROAD CONGRESS.

What promises to be the biggest convention ever held in this country, outside those of a political nature, is that of the American Road Congress, which is to be a combination of the big conventions of the American Association for Highway Improvement, the American Automobile Association, the National Association of Road Material and Machinery Manufacturers and all their affiliated organizations, and every interest working for a better system of public roads in the United States will be represented. The congress is to be held next fall, either in September or October, the exact time and place not having, as yet been determined.

All the associations which are to participate in the congress have previously been holding individual conventions. All have been working whole-heartedly, but in different ways, for the improvement of the roads of the United States. The congress will bring all factions together. It will line up the farmers with the automobilists; the state road authorities with the Federal authorities; the manufacturers with the engineers; the scientists with the laymen.

With the American Association for Highway Improvement alone, nearly one hundred state, county and municipal road improvement associations are allied. With the American Automobile Association, hundreds of automobile organizations are affiliated. All these will be represented at the congress. The American Automobile Association will arrange for automobile tours to the convention city and will play an important part in the convention. The speakers will include some of the leading government officials, diplomats, engineers, and railroad and automobile men. The convention will last a week.

The great economic principle at the basis of the educational work of the American Road Congress is that money invested in the public roads makes annual returns almost as great as the money originally expended. The officials of the congress have prepared figures showing that the improvement of the main highways of the country, constituting about 20 per cent of all public roads, would result in an annual saving of at least $250,000,000 in the cost of hauling alone. It is estimated that the amount saved annually in hauling alone would be sufficient to improve 50,000 miles of road at an average cost of $5,000 per mile. In five years, this would improve 250,000 miles of road, which would be sufficient to bring the total mileage of improved highways up to the required 20 per cent. The increase in land values is another important factor that will be dwelt upon at the congress.

Some men get in on the ground floor, but they never get any higher because they wait for an elevator which never comes.

JULY BARGAIN SALES.

Some folks buy off-hand, anything, anywhere, at any price. Others watch for bargain sales and secure the same article at a reduced price.

Careful buyers should look over our Classified Department. Some splendid opportunities for securing slightly used equipment at moderate prices are offered there.

Should you not find the particular machine you need, place an ad in our next issue. Rates, $2.00 per inch for space used.

NATIONAL ROAD MOVEMENT

Projects for Rehabilitation of "Old Pike" Arouse Enthusiasm—Meetings Held in Many States—Philadelphian Plans Map of Historic Roadway for School History

The movement to pave the old National Highway which extends from Washington, D. C., to St. Louis, Mo., has received mention in our journal a number of times and we are pleased to note that the matter has been taken up and discussed by various organizations with a view to furthering plans for carrying on the actual construction work.

It is a mammoth proposition and one which will need the united efforts of the citizens in all states through which the road passes. It is expected that the Government will extend substantial financial aid and an urgent appeal has been sent out to the people along the old National Road to assist the Daughters of the American Revolution to further plans that the famous old road through Illinois may be paved as a memorial to Lincoln, the section in Illinois to be known as the Lincoln Memorial Highway.

At the trans-ocean-to-ocean convention, held in Kansas City, Mo., in April, states from Maine to California sent large delegations, some states having as high as 250 delegates. Later, in May, at Greenup, Ill., an enthusiastic meeting of the National Road Association of Illinois was held, 1,500 delegates being present, most of the towns along the old National Road being represented. The conventioners showed by their enthusiasm that they had awakened to the vast benefits that this proposed highway would bring to the cities affected, and it is the intention to make a concentrated fight to secure the legislation to have this road bed made the "ocean-to-ocean National Road" which the Government is contemplating building.

State Engineer Johnson, of Springfield, made a short address and was followed by Editor George Lecune, of Effingham, Ill., who stated that contributions were needed for the good roads fund. A popular subscription was taken and $300 was raised in short order. Committees were appointed to draft resolutions appealing to Congress to appropriate money to build the National Highway. Vandalia was chosen as the place to hold the next meeting, to be held July 4th.

Plans for building this road will be watched intently by all paving interests, and the work will be of such magnitude that there will be ample room for all to have a share. That "brick" will get a fair share of the contracts is not only possible, but probable, as many large paving brick plants are situated in close proximity to the roadway, thus freight rates would be reduced to a minimum and, in many cases, the brick could easily be delivered by wagons or motor trucks.

How much of the roadway is to be paved with brick depends largely on the extent of the work put forth by brick paving interests. Many friends of brick paving are working, but we cannot expect our friends to do it all, while we sit idly by, waiting to pick the "plums." Now is the time to become identified with the movement and a strong representation should be sent to these preliminary meetings, which are being held from time to time. It goes without saying, that those who "get in on the ground floor" will stand the best show to get the orders. If you live near the National Road, begin by securing the co-operation of the local press and then boost hard and often, not only through the press but by personal talk with your neighbors. Don't let an opportunity pass to tell people of the merits of brick paving. Many do not know and will be glad of the information. Let us get our share of the paving of the National Road, which will be famous for many future, as it has been for several past, generations.

Map of Road.

The National Road, known in some localities as the "Old Pike," has been in the "limelight" so much during the past few years that considerable literature has been produced on the subject, but, so far, no authentic map has been available. A Philadelphian, who has given the matter considerable attention, has written us the following letter on the subject. If any of our readers can give any further information we will be pleased to hear from them:

Editor of "Brick and Clay Record": As a schoolboy I was always annoyed by the vagueness of the accounts of the National Road to the West, as there were no maps in the schoolbooks, and I was not able to get any information from the Geological Survey. I finally secured the name of this book: "The Old Pike, a history of the National Road, with incidents, accidents and anecdotes thereon," by Thomas B. Searight, Uniontown, Pa., published 1894 by M. Cullaton, Richmond. I was rather disappointed when I looked this book up, to find that it contained no map, consisting merely of personal reminiscences. By reading very carefully the chapters on the various taverns along the road, I finally pieced out a list of the towns along the eastern end of the road, although many of them were not to be found on the map.

More recently I have run across the following sources of information:

Article in "Brick and Clay Record," 9/15/11 (By M. Brandenburg, 445 Plymouth Court, Chicago), on paving the road with brick.

Article in Good Roads, 11/4/11 (By Hartley N. Phelps, Box 73, Forbes Sta., Pittsburg), giving history of road. Reprinted in "Brick and Clay Record," 12/1/11, with an appeal to brick manufacturers to push the scheme of repaving.

Letter from Lieut. Rockwell, of the Engineers Corps, Washington, D. C., War Dept. This gave a list of the principal towns, and that the total Government expenditures were $6,759,257.30, extending over the period 1807-1841.

"Historic Highways, Vol. 10, Cumberland Road," by A. B. Hulbert, published by Arthur H. Clark Co.,

From these various sources I obtained the following list of towns, arranged in order:

Maryland: Baltimore, out W. Balto. St. to Ellicott City, Lisbon, New Market, Frederick, Middletown, Boonsboro, Funkstown, Piney Grove, Hagerstown, Clear Spring, Indian Springs, Hancock, Flintstone, Cumberland, Frostburg, Keyser.

Pennsylvania: Addison, Somerfield, Farmington, Chalk Hill, Uniontown, Searights, Brownsville, Bridgeport, Centerville, Beallsville, Laboratory, Washington, Claysville, Coon Island, Vienna, W. Alexander.

West Virginia: Roney's Point, Triadelphia, Elm Grove, Wheeling.

Ohio: Bridgeport, St. Clairsville, Loydsville, Morristown, Hendrysburg, Fairview, Washington, Cambridge, Norwich, Zanesville, Gratiot, National Road Sta., Atherton, Columbus, Springfield.

Indiana: Richmond, Centerville, Germantown, Cambridge, Dublin, Greenfield, Indianapolis, Brazil, Terre Haute.

Illinois: Greenup, Martinsville, Effingham, Vandalia, Alton.

If you will find any discrepancies in the above, I should appreciate any information you can give, also any additional names of smaller towns. I intend to get in touch with some people who are writing school histories, also a library history, and see that a good map and account is inserted. Yours truly Wm. Campbell.

LOUISVILLE ADOPTS BRICK PAVING

Southern City Has Almost as Much Mileage as in Any Other Material—Hires Expert to Superintend Work and See it is Done Right

By G. D. Crain

The interest which attaches to the history and use of paving brick in Louisville, Ky., is as vital and compelling as that which may be found anywhere that the vitrified block has established itself as an approved material. For brick pavements "came, saw and conquered" years ago, in the Gateway City. The result is that there is now a total mileage of brick streets and alleys in Louisville second only to the aggregate mileage of macadam thoroughfares and brick surfacing is in the ascendancy, gaining rapidly upon macadam.

It is not to be denied, however, that at present a renaissance of the brick street is developing in Louisville—not that block are being used less liberally than formerly, but that the class of work is being wonderfully improved. For several years past brick surfacing here has not given the best service that could be desired, not through any fault in the material itself, but in the manner in which it was handled.

The municipal authorities of the Falls City realizing the essential value of brick thoroughfares, have engaged a specialist in brick paving to superintend the work. Increasing use of brick, especial inspection and demand of detailed excellence in the work of the contractor mark the general improvement of this most favored type of surfacing.

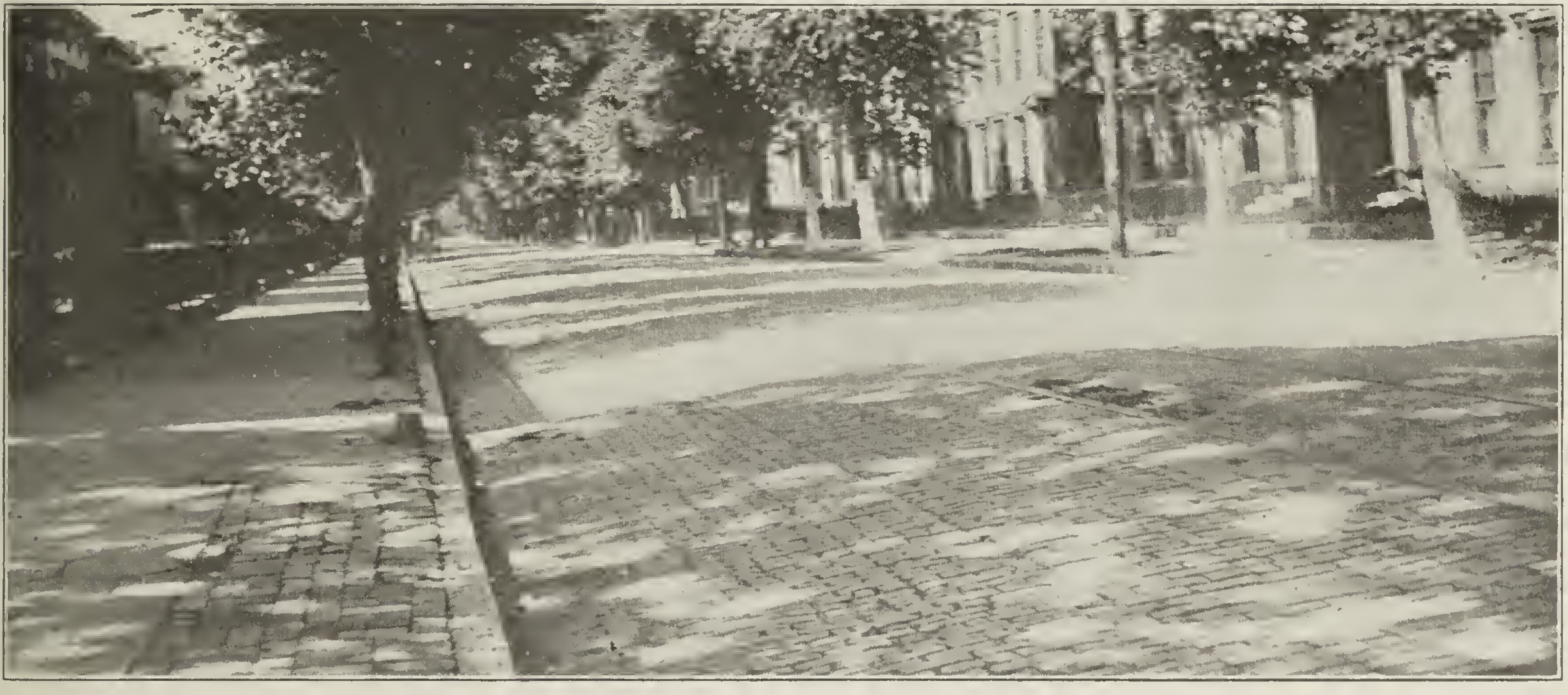
The paving block was introduced to Louisville about twenty years ago, and was officially recognized as a standard material in 1895, according to the records of the municipality. The first section of brick street was laid on Second, between Broadway and College. This work testifies to the durability of brick, in that it is even now in good condition, after seventeen years of strenuous service, an excellent grade of filler having been used during the careful laying of the work back in the '90's.

When vitrified brick appeared in the paving trade at Louisville, cobblestones and granite block were practically its only competitors. Macadam and asphalt have since come to the fore, but not with sufficient impetus to interfere seriously with the progress of brick paving. In 1895, cobblestones were the favored material—chiefly for lack of something better. Granite was expensive and only certain portions of the city subjected to unusually heavy traffic, such as the wholesale and shopping districts, were paved with that material.

Coming back to vitrified brick, however, it may be said that it was just getting a foothold in the Falls Cities field when it combated successfully and for the first time its present-day rival, wooden block pavement. Every veteran paving contractor in the Bluegrass metropolis has a vivid recollection of the Nicholson block, the famed material introduced during the last half of the '90's in this part of the country, and its sporadic success cut deeply into the paving brick trade for a time.

The Nicholson block was a tarred proposition—not creosoted like the modern wooden paving block. It was set upon a firm foundation of sand, which was packed hard and then covered with an under-surfacing of inch-boards before the block itself was set. Somewhere around 1897 the wooden pavement made its appearance in Louisville. Parts of Jefferson street, Market street and other prominent thoroughfares were paved therewith, including portions extending through the business district. The beginning and the end of the wooden block story, however, is expressed in the record that the tarred pavements lasted about two years. Successive rains and snows proved to be too much for them, and they buckled and humped in every conceivable fashion. The city tore them up and declared that it had had enough of that kind of street surfacing—leaving the vitrified brick victorious.

Since that time the advance of the clay block in popularity and in mileage has been constant. In 1899 and 1900, when Louisville boasted approximately 165 miles of paved streets, 25 miles of them were brick paved. There were, in addition, 16 miles of brick alleys, making a total of about 41 miles of brick thoroughfares in the Gateway City, which now boasts of approximately 200 miles of paved streets, showing an increase of 35 miles in the past twelve years. Its table of classifications for surfac-



Section of Brick Pavement Laid in Louisville, Ky. in 1895, Now in Good Condition After 17 Years of Strenuous Service.

ings, including street and alley mileages, follows:

Streets,	macadam	69.4 miles
	vitrified brick	60.4 miles
	asphalt	42.6 miles
	granite block	19.4 miles
	boulder paved	6.5 miles
	cold asphalt	2.1 miles
	boulder paved	.8 mile
	wooden block	.5 mile

A survey of this record shows that the macadam surface has the call in Louisville. But there is a difference of only 9 miles between that total of macadamed streets and the aggregate of brick paved. The difference would be much if brick were not so widely favored, for it is in the newly-created suburb or sub-division that the authorities order the macadam thoroughfare on account of its cheapness. It is extremely gratifying to note, however, that a big percentage of the new suburbs have forsaken the macadam roadways with which they were presented by the city and have subscribed funds for the most approved type of pavement, a factor which tends toward increases in property values.

In recent years it is to be regretted that some brick streets have not given entire satisfaction. The failure in every case has been proven to be due to the carelessness or negligence of contractors in using low grade fillers and hap-hazard forms of laying, and deficiencies in superintending the actual execution of the work. There has never been an instance of the brick itself coming below standard. The block, when set, never crumbled or chipped unduly, but the foundations laid in some sections of the city were such that holes and upheavals followed as a matter of course.

It is well established that a vitrified block street should last from ten to fifteen years, with a minimum of repairs. But the life of brick streets laid in Louisville in recent years has only been from three to five years. Some squares of paving have been reduced almost to ruin within the short space of three years. This confirmed the city authorities in their belief that something was wrong, and steps were immediately taken to remedy the defect. A specialist was called in to prescribe for the complaint, just as any well-ordered household would seek professional assistance in an emergency. And the suggestions of the specialist have been followed out in both spirit and letter.

E. B. Schmidt, the engineer now in charge of brick paving in Louisville, Ky., was formerly city engineer of Terre Haute, Ind., a city of 75,000 population, which has produced some of the finest brick streets in the Middle West. While Mr. Schmidt was city engineer of Terre Haute, a special committee of the National Paving Brick Manufacturers' Association was sent the rounds of various bustling cities in the Middle West to find the municipality possessing the finest block thoroughfares. Cleveland, O., was awarded the palm and Terre Haute finished a close second.

What Mr. Schmidt has to say about the matter is interesting: "I am a brick man from the ground up," he said to "Brick and Clay Record's" correspondent. "Of course, I am an engineer first and a brick man after that, but my work has kept me in touch with clay products for paving, and there isn't any surfacing equal to one made of good vitrified block laid properly.

"Since I arrived in Louisville I have discovered facts which have impressed me all the more with the superiority of brick," continued Mr. Schmidt. "For instance, asphalt is considered the fashionable street surfacing and we have more than forty miles of asphalted highways here in town and, in point of cost, they are by far the most expensive propositions that could be imagined. Squares and squares of asphalt, supposedly of the best quality that could be procured in this country, have lasted only three years in Louisville. Then it has been found necessary to tear them up again, from foundation to surface, and relaid, not to speak of the continual patching and rolling demanded by them.

"The wooden block is persona non grata in the paving world. Its only advantage is noiselessness and sometimes it cannot claim much along that line, when the troubles arising from creosoted pavements are considered. When I was in Terre Haute there was a section of wooden street which reared up in humps every time it rained—and it was presumably of the best quality the market afforded. We used to receive telephone calls to come and roll the humps out of Cherry street every time it rained in Terre Haute"—and the brick paver chuckled reminiscently.

"Now that I have outlined my position with regard to brick clearly, we will proceed with the matter in hand. To begin with, the reason I am in Louisville is to secure better brick pavements—the sort that were laid here when vitrified block were first introduced. The work is going to be long and arduous.

"The Board of Public Works is just now outlining plans which will produce the desired changes, we think. Inasmuch as this work is going on now, I cannot do more than outline it generally. Primarily, it consists in a complete revision of the specifications for laying vitrified brick. The old specifications were only "generally correct" and demanded quality work in just an approximate manner. We are working out a plan, minute in every particular, which every contractor will be required to live up to in the future and the inspection by the municipality, prior to the acceptance of the finished job, will be just about ten times as exacting as heretofore.

"So far as the basic material is concerned, I do not believe that there will be any changes made. A good vitrified brick is a thoroughly reliable product. We have used thousands of Peebles' block in the past few years and, as every brick man knows, the Peebles' line is a good one.

"It is with the filler that we have a crow to pick. Local contractors seem to be wedded to the bituminous filler. Whether or not this material is genuinely satisfactory is not for us to determine, but we are determined to demand that, whatever filler is used, shall be of the right grade and in sufficient quantity to guarantee satisfaction when the pavement is put in commission. For instance, the city has been pushing a suit against a contractor for alleged faulty street construction where the work buckled and sunk irreparably. During the trial, it developed that rain fell on the sand foundation just before the brick were set and the moisture forced the sand up between the block for a distance of three inches, so that only an inch or so of filler was spread in the interstices. If accurate inspection will do away with this sort of thing in the future, we propose to see that nothing is lacking in that respect.

"In a word, I think that the standard specifications of the National Association will suffice for our needs," concluded Mr. Schmidt.

"Louisville has been experiencing this trouble with vitrified pavements only within the past few years. The first surfaces laid in this city compare favorably with those in any city in the country, and the trouble is the result of carelessness and lack of attention in this particular department of public works. Now that the board and other officials are deeply interested in the proposition, I am sure that the present administration will develop better results than any of its predecessors for the people of Louisville. As one evidence of this, it might be mentioned that various members of the Board of Public Works have accepted an invitation to visit Cleveland and inspect her magnificent streets in the near future. Drop around in a year's time and we'll show you a big mileage of vitrified pavement which will hold its own in comparison with that of any city of a quarter of a million population in the United States."

The acid test of economy develops the essential superiority of brick pavements above all others in the Falls City. For instance, in an outlying section, a macadam thoroughfare might be demanded by the authorities—but if it can be shown that brick would be but slightly more expensive and much more advantageous for property-owners, the vitrified block gets the call.

Again, brick often supplants asphalt because it is proved that a smooth, attractive vitrified surface may be obtained and maintained at less cost than that demanded by the Lake Trinidad product. And in the down-town section, brick is often substituted for cobble-stones in the specifications because, in spite of greater cost, it will last longer and offers greater adaptability for all kinds of traffic.

The cost of a square yard of block pavement in Louisville is $1.80. This figure is exclusive of the cost of excavation, for the Gateway City is one of the few municipalities of the Middle West which does not include the excavation cost in the specific paving contract, although this item goes in as a sub-division in the general contract for the work. The cost of both paving and excavation is born by the property-owners and all repairs are paid for by the city. A recapitulation of the data in hand gives the cost for the two sections of the work as follows:

Brick paving, including foundation, material, etc....	$1.80 sq. yd.
Excavating, including chiefly labor..................	.30 cu. yd.
Total..........................	$2.10

This cost has remained about the same in Louisville during the past ten years. Occasionally the total has descended to $1.90 or $1.80 and occasionally it has ascended to $2.25 or thereabouts. Competitive items in paving, such as the cost for cobbles, wooden paving or asphalt, have decreased within the past decade. The reason for this seeming feature in favor of the competitive lines is this:

Louisville is further away from the block manufacturing centers than most cities of the Middle West. The burners of vitrified brick in Northern Ohio and Northern Illinois have had to meet high freight rates upon their product and it has been correspondingly high-priced in this territory. Concessions in rates upon asphalt and granite shipments have been allowed within the past ten years, reducing the costs of these materials, but reduced vitrified block rates are yet to come. At that, the vitrified block has its competitors beaten and, when there is an equalization of rates upon south-bound freight of this kind, its position will be even stronger.

Just how the relative values of paving stand in the Falls Cities is shown in the following table:

Cobblestones	$1.00 per sq. yd.
Macadam	1.60 per sq. yd.
Vitrified brick....................	1.80 per sq. yd.
Asphalt	1.90 per sq. yd.
Wooden block.......................	2.10 per sq. yd.

(All costs exclusive of cost for excavating.)

WEIGHTS OF BURNED CLAY GOODS

Frank Fidler, English Brickworks Engineer, Gives Practical Rules for Securing Exact Weights of Various Kinds of Clay Products

It is often desirable to obtain close estimates of the weight of clay goods before actual manufacture is begun as, for instance, when an inquiry has been received for goods that are different in shape or size from those ordinarily made.

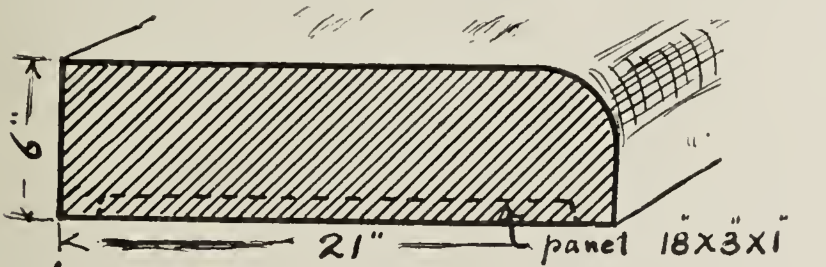


FIG 1

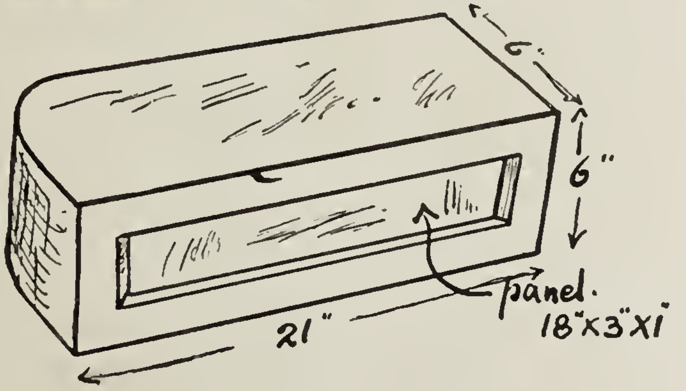


FIG 2

Exampels of Blue Platform Coping.

The delivered price can only be properly set when the accepted weight is known as the carriage costs are, of course, based entirely on the weight.

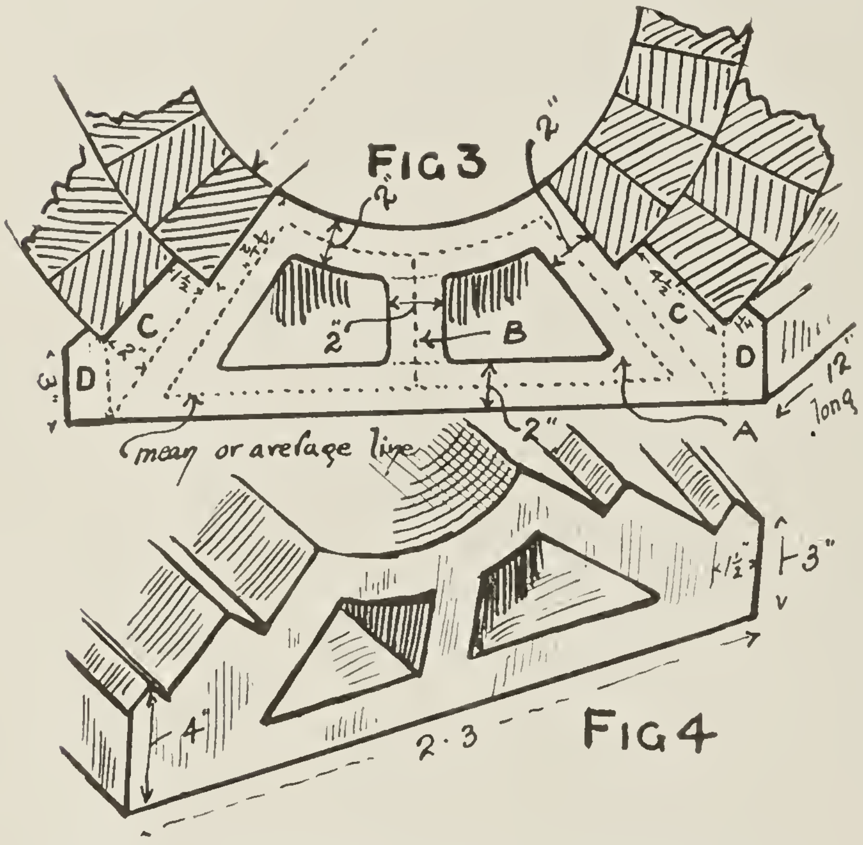
It is evident, therefore, that some system of calculation should be adopted which will yield close approximate weights and the purpose of this article is to show that such calculations are really very simple, in a majority of cases, doing away with "guess work" and "hit or miss" estimating.

We will assume that a "Blue Brick Works" (we are speaking of the blue Staffordshire brick) has received an inquiry for a special size of blue platform coping, such as are shown in figures one and two. These are to be solid but are to have a panel on the bottom bed, 18x3x1 in. The over-all sizes are to be 21x6x6 in. with a 3-in. bullnose; the inquiry calling for 100 yards, lineal measure.

We must calculate, first, the weight per individual block; second, the total weight per one thousand and third, the weight of 100 lineal yards. The first thing is to arrive at a basis for weight, based on measurements and actual weighing of some article already made of the same material and of similar density. It is well established that the ordinary 9x4½x3⅛ in. wire-cut blue brick weighs 80 cwt. per 1,000. One brick 9x4½x3½ in. contains 126½ cu. in.; 1,000 brick, therefore, contain 126,500 cu. ins., which reduced, equals 73.2 cu. ft. Reducing 80 cwt. to pounds by multiplying by 112 we have 8,960 lbs., which divided by 76.2 ft. gives 122.4 or the number of pounds in 1 cu. ft.

This factor of 122.4 lbs. per cubic foot must be the basis of our calculation for the platform coping and similar block.

Cubing the main dimensions of the coping block, 21x6x6 in., we have 766 cu. in., from which deductions must be made for the panel 18x3x1 in. and the bullnose corner. The panel contains 54 cu. in. and the bullnose corner can be reckoned off as an angle piece 6 in. long by say 2 in. each way. The actual cubical contents are obtained by multiplying 6x2x1 in., the latter figure being half the height of the triangle (the usual mensuration rule) making 12 cu. in. to be deducted for the bullnose. Deducting 54 in. for the panel and 12 ins. for the bullnose from 756, the original measure, we have 690 cu. in. Since 1728 cu. ins. weigh 122.4 lbs., 690 cu. in. will weigh 690x122.4 ÷ 1,728 or 48 +. Taking 49 lbs. as the average weight, 1,000 such block would weigh 49,000 lbs., which reduced makes 437½ cwts., or 21 tons. As the actual inquiry was for 300 ft. and the "long way" of the brick is 6 in., it follows that 600 block are required and we find that 600 block at 49 lbs. each, weigh 262½ cwt., or 12 tons.



Showing Method of Measuring Intricate Sewer Block.

The close weights of all similar plain block can be found in like manner but it often becomes necessary to find the weight, per running foot, of a more intricate block as, for instance, a sewer invert, as shown in figures 3 and 4. Then the calculation becomes seemingly more intricate but it is really very simple when the same procedure is carried out logically. First, find the exact size of the full section of the invert. We will assume the thickness of the various parts to be the same as above. It will be noticed that the main portions of the block are 2 in. thick. With a pair of dividers run around on an intermediate or a mean line in the thickness and ascertain how many lineal inches there are of this 2 in. thick part. It will be found that portion A contains 48½ in. and the web portion B 3½ in., a total of 52 in. There is, therefore, in one running foot, 52 in. of section 12 in. long and 2 in. thick, making 1,248 cu. in., but we must also allow for the shoulders C and D. The average length of shoulder C is obtained by adding together the measurements of the long and short sides and dividing them by two, which gives the mean or average length.

In this particular case, the sides, measure 4½ in. and 7 in., making the total measurement 11½ and the mean 5¾ in. The average height or thickness of this shoulder is now obtained by adding together 1½ in. for the top end and 2 in. for the broadest point, making a total of 3½ in., or an average of 1¾ inches. Each shoulder C is, of course, 12 in. long so there must be two shoulders C 12x5¾x1¾ in. Multiplying, we have 241½ cu. in. for the 2 shoulders C.

There still remain the two shoulders B and the average height of these shoulders must be obtained. The side measures 3 in., to the apex 4 in., making an average of 3½ and, as these shoulders are 1½ in. thick and 12 in. long, we have a total of 88 in. for shoulders B. The main portion of the block contains 1,248 in. and deducting 241½ for shoulders C and 88 for shoulders B we have 1,577½ in. Dropping the fraction and following the same method used above, we find the weight to be 111.7 lbs. per lineal foot or for all practical purposes one cwt. per lineal foot.

These examples are sufficient to show the correct process to be followed in obtaining closely calculated weights.

Electric Fan.

The warm weather, now prevailing, turns one's thoughts in the direction of the electric fan, and in this connection it is interesting to note that the American Blower Co., Detroit, Mich., is putting out a large number of its "Ventura reversible electrical fans," which are so built that, by means of an ingenious reversing mechanism, it is possible to discharge the air straight ahead, toward the ceiling, downward toward the floor or in an intermediate direction. These fans are especially useful for providing ventilation for offices, kitchens, apartments, toilets, etc., and may be installed at moderate cost. Those desiring further information may secure a booklet concerning same by addressing the company at its Detroit office.

A Work of Art.

The recently issued catalogue of the Brown Instrument Co., of Philadelphia, Pa., is a work of art. It deals largely with the Brown pyrometers but considerable attention is given to the entire line made by the concern. The cover is a terra cotta brown, with heavy embossing on the outside front page. In addition to the description of the various indicating and recording instruments made by this concern, a list of the firms that are using the products is given and occupies nearly a dozen solid pages.

Decrease in Cement Industry.

Statistics of cement production for 1911, prepared by the United States Geological Survey, show that while there was an increase over 1910 of about a million and a half barrels, the increase is the smallest recorded within the past 13 years, while the total valuation showed an actual decrease for the year of $2,046,956 or 1.48 per cent. Straws show which way the wind blows. Burned clay building materials are coming into their own. Their merits are just beginning to be recognized.

New International Dictionary.

G. & C. Merriam Co., of Springfield, Mass., has just published a new Webster's International Dictionary edited by Dr. W. T. Harris, formerly U. S. Commission of Education. The International contains 400,000 words and phrases defined, twice as many as in the old International and 2,700 pages with 6,000 illustrations.

COMPENSATION LAW WORKS HARDSHIP.

Illinois Legislature Passes Amendment to Recent Enactment for Compensating Injured Employes.

The operation of the Illinois Workmen's Compensation Law resulted in conditions imposing a very great hardship on all persons made liable thereto. Immediately following its passage, the Casualty companies writing this class of insurance raised their rates to an average of more than three times what was necessary to cover the hazard, thereby distorting the purpose of the law, which was to prevent injury to employes and provide reasonable compensation to such persons as met with injury, and not to compel persons electing to come under its provisions to pay millions in excessive premiums to casualty companies.

In order to relieve persons and corporations coming under the provisions of this law from the burden of excessive premiums imposed by Casualty Insurance Companies, the Illinois Legislature, at its special session on June 5, 1912, passed an Amendatory Act to the General Insurance Law providing a plan of Inter-Insurance, whereby such persons and corporations may provide their own insurance by entering into an Inter-Insurance agreement, and thus upon an equitable pro rata basis obtain the desired protection at the actual expense of the hazard.

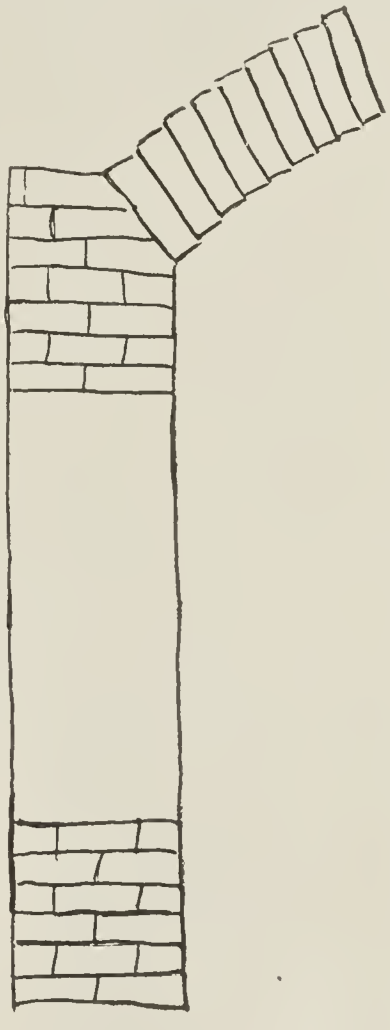
The entire plan of Inter-Insurance and all matters entering therein must be approved by the Insurance Superintendent, and the standard fixed by him must be reached by persons or corporations seeking a license to conduct this Inter-Insurance business. In drafting the Inter-Insurance agreement all objectionable features that might enter into the original plan of mutual insurance can be entirely eliminated, and all business and insurance advantages can be embodied in this agreement, thus the plan is entirely free from objections, and will operate to the most perfect satisfaction and greatest possible benefit to all persons uniting therein.

The Workmen's Compensation Act, being a new law, is somewhat cumbrous in operation and permits, in some instances, an imperfect application, but by the Legislature providing a plan of Inter-Insurance, the actual purpose of the law can be carried out, and wherein the law is found imperfect in operation or oppressive, it can be later amended so as to in time equitably settle the rights of both the employer and the employee in this matter. However, efforts to equitably adjust and apply this law must come from Inter-Insurance organizations, and certainly cannot be expected to come from Casualty Insurance Companies.

LEAKING KILN CROWNS.

A Georgia brick works engineer writes of his experience with leaking kiln crowns as follows:

"During the winter just closed we have had more damaged ware due to leaking kiln crowns than during our entire experience. The frequent slow rains, that continued from 12 to 24 hours, saturated the crowns with moisture until they could hold no more, and the water dripped away from the inside of the crown down onto the ware, causing considerable loss. One kind of clay in particular which we use for making brick, is especially sensitive in the presence of moisture, and the leaking played havoc with six or seven courses of brick on top, causing a total loss at this yard of nearly 100,000 brick and was directly responsible for many poor burns.



Cross Section of Kiln Wall.

"Leaking through the interstices of the crown brick is very rare and when it does occur is usually comparatively easy to stop. A thin grout of fine ashes and brine makes a very good cement and for use on a dry crown built of porous brick should be very thick, in order to penetrate the spaces to any depth. There has never been, as far as we know, any effective or in other words any sure way to prevent a crown from leaking. Cement will not stand the expansion and contraction, and in order to get results with cement the treatment must be continuous, the point being always to try to make the crown shed the water.

"There is a construction, however, that will prevent practically all leakage on the ware (see sketch). In constructing a crown of given height, it is necessary first to set the skew backs on the wall so as to pitch the first circle of the crown a little nearer perpendicular than is usual, so that the bottom end of the brick in each succeeding circle will be elevated at point of contact at the bottom, about ⅛ of an inch above the previous circle. A circle of wedge-brick should be put in often enough to continue this construction to the finish. Where wedge-brick are not used, a heavy slip will answer if the points are well hammered at the bottom to maintain each circle in proper shape. The one thing sought is to prevent any downward projection on which the water could collect and drip off. When the crown brick become saturated the water will run down the inside of the crown to the kiln walls. As this adds nothing to the expense of construction and needs only a little care it is well worth doing, and will save ten times the worry it requires to accomplish the result, to say nothing of the saving of money by preventing loss of brick.

"To go further into the matter, crown brick could well be burned again if you use fire brick set in benches with ends exposed on top of common and salt-glaze in the kiln. This will apply to any crown brick. It would be difficult to put in crowns with brick glazed on all sides, but that would be about the only way to prevent the crown from becoming saturated. It is a mistake to use soft brick in a kiln crown, as the end exposed to the fire will shrink and the end exposed to the weather will freeze, tending to shorten the life of the crown. With the use of end-glazed brick the first object would be to prevent the crown from becoming saturated, the next to prevent the effects of frost by making the crown impervious. Here is where the filler comes in. The filler must prevent the entrance of moisture at the joints. A filler composed of the following, made very thin, is the best we have ever used:

Salt, 1 part.
Clean clay, 2 parts.
Very fine ash, 2 parts.
Red lead, 1 part.
Spanish whiting, 1 part.

"This must be applied very thin, so that it will run like water, and if your crown brick are very porous it will be necessary to wet the crown before applying the mixture, the idea being to get the solution as deep down into the interstices as possible. A red heat will flux the mixture, thus making a bond on all sides and preventing the entrance of moisture. A good mortar for laying new crowns is made as follows:

Clay, 3 parts.
Salt, 1 part.
Very fine ash, 3 parts.
Red lead, 1 part.

"This mortar will flux at a good red heat and the exposed portion that does not receive sufficient heat to flux will make a good cement that will not wash out."

CLAY WILL NOT GLAZE.

Editor "Brick and Clay Record:" In the article "Practice vs. Theory" published in your journal, sometime ago, the writer claims that he has seen no clay that will not salt-glaze. Now we are making drain tile from a surface clay but have not been able to salt-glaze the ware, although we have given it only one trial as we are not familiar with the method. In the one trial, we found upon opening the kiln that a fine dust had settled on the ware producing a brownish color. We were told by the party who superintended this burning that our clay would not glaze, and we had, therefore, given up hopes of doing this until the article referred to gave us new hope.

Now we are quite anxious to salt-glaze our ware and would appreciate any information that would make it possible. Our clay burns to white or cream color. We would also like to know if the addition of more sand would help in the matter of salt-glazing.

We are troubled with some of our tile shelling when exposed to freezing and thawing conditions and thought that a salt-glaze would overcome this. We have no trouble with tile after they are under the ground, it is only when exposed on the surface that some will shell.

Hoping that some of your readers will be able to give us some help on this question, we are telling our troubles to you.

Michigan Clay Manufacturer

INFORMATION WANTED.

A South Carolina clay manufacturer writes asking information as follows:

"In our territory we have lots of red clay but it seems to burn a very poor brick. Can you tell me where I can get any information as to the burning of this kind of clay? All our brick are made from a yellow clay which we find in the river bottoms. This red upland clay makes a good 'green brick' but cracks up in the burning."

If any of our readers can give any information on the subject, we will be glad to hear from them.

It is stated that a well-built chimney 100 feet high will sway from 3 to 4 inches from the vertical in a high wind without danger of falling.

POROUS BRICK AND THEIR ADVANTAGES.

Note.—The following article which appeared in a recent issue of the "Revue Generale de Ceramique Verrerie, Chafournerie, was translated by one of "Brick and Clay Record's" friends:

"In a general way, porous brick are designated, as those in which a part of the clay is produced by coal dust, peat, saw dust or other combustible matter, that caused the clay, when burned, to be full of little holes or cells, the size of which depends on the dimensions of the grains of the foreign combustible particles added to the clay. One is often able to reduce the weight of a brick in such a proportion that they can be floated on water, but still sufficiently solid to be used in construction.

"Such a light brick is rarely made, for there are but few kinds of clay that will permit of the addition of such great proportions of combustible matter and special kinds of clay are too expensive for general manufacture.

"The foregoing simply proves that one can succeed in giving to brick, the weights desired, if one calculates properly the quantity of combustible matter added to the tempered clay. One then is in a position to prepare porous brick of the same weight and solidity as the hollow brick.

"According to the number of pores, a wall built of porous brick dries more or less rapidly but in all cases the wall will dry more quickly if built of solid brick. Porous brick absorbs humidity as readily as they allow the moisture to evaporate, therefore, they are not suitable for exterior masonry but are very well adapted for the construction of interior walls. The density and solidity of porous brick are naturally not as great as that of solid clay brick but answer the purpose of nearly all uses of the trade. This suffices to verify their resistance of pressure. All one can say is that the mixture of clay and combustible matter offers always the same resistance, but the conditions under which the burning is done vary, and that is why it is well to test the brick from each kiln.

"Porous brick protect against heat better than the solid brick for the air contained in the cells forms a very good insulation and buildings in which porous brick have been used are cooler in summer and warmer in winter than those built of solid brick. Further, porous brick are not only poor heat conductors but are also non-conductors of sound and are, therefore, very useful for the construction of interior walls so as to reduce as much as possible the translation of sound from room to room. The cells filled with air arrest the sound wave but this depends notably on the quality of the clay and the method of the burning of the brick. Thus, in consequence of their lack of weight, the cost of transportation of porous brick is greatly reduced. A wagon of ten tons capacity can carry 8,000 porous brick of average size, whereas 3,200 solid building brick would be a good load for the same wagon. The cost of construction is also reduced since the cartage and loading cost is less and even the foundations can be less important because the weight they most support can be notably lighter than when the building is constructed of solid material."

KILN FLOOR CONSTRUCTION.

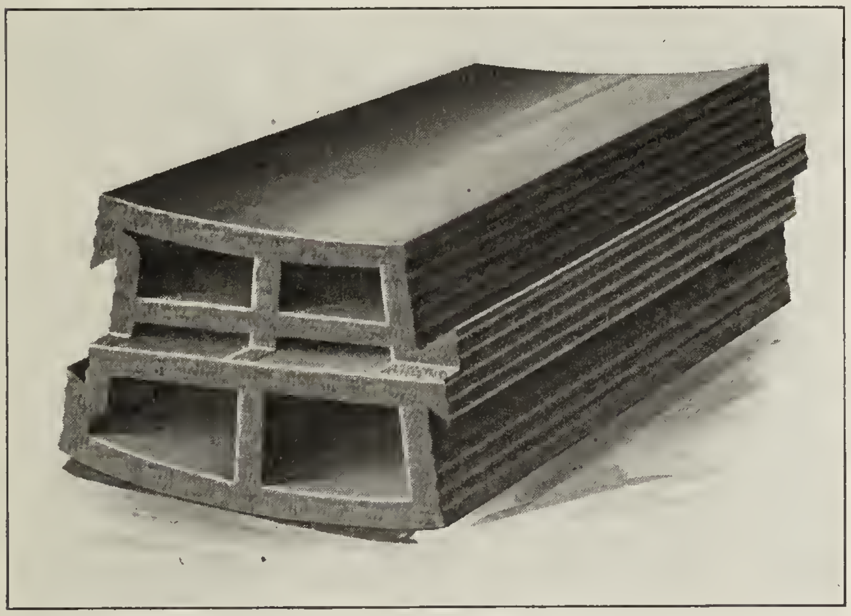
An Alabama paving brick manufacturer asks information as to the best method of kiln floor construction, as follows:

"I shall be pleased to hear the various opinions of clay plant superintendents as to what kiln bottom is most suitable for round down draft kilns to be used for burning paving block. If open or spider-bottoms are used, what measures should be taken to prevent sand (which must be used in kilns) from filling up the flues?"

SEWER PIPE NEWS

VITRIFIED SEWER BLOCK.

The American Sewer Pipe Co., of Akron, O., is making gigantic strides toward producing an improved vitrified clay hollow block for building sanitary sewers of large sizes and it is claimed by the manufacturers that the product now put out is well nigh perfect. The first hollow block sewer of which we have authentic record was in ancient Rome, which sewer is still intact, speaking volumes for the hollow block system of sewer. However, this Roman sewer, like many others designed, had the defect of providing no means of sealing the joint between the ends of the block, which seal is absolutely essential for modern sanitary sewer construction. The block, as manufactured by the American Sewer Pipe Co., provides for sealing this joint and can be furnished in sizes ranging from 36 in. to 108 in. The materials from which these block are manufactured are the celebrated Akron shales and Ohio River clays, which are well adapted to the requirements of sewer construction and when made in relatively thin sections, attain a perfect vitrification.



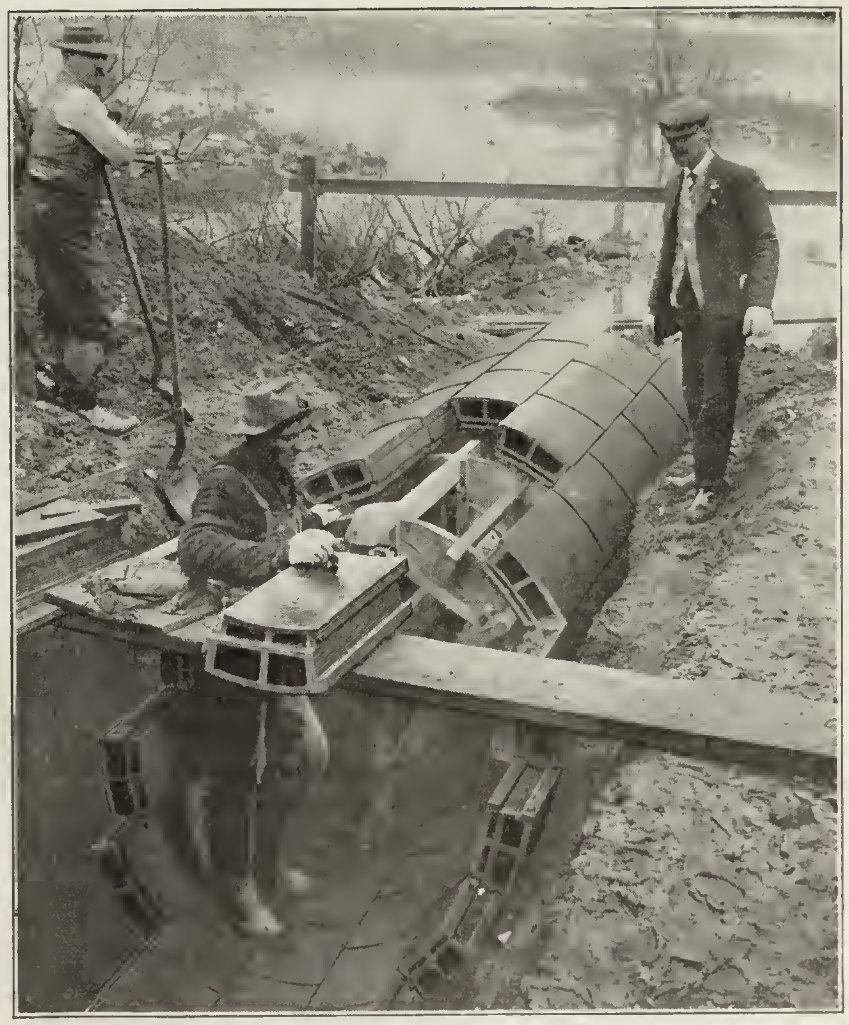
Type "A" Block, Made by American Sewer Pipe Co., for a Sewer 66 Inches and Over.

These block are manufactured in two styles but the larger size sewers from 60 to 108 in. require style "A," as shown in the illustration, which block shows a crushing strength of 3,040 lbs. per square inch.

The lengthwise joints are effected by generous male and female dove-tail joints which dove-tails, when thoroughly mortared, assure great resistance against internal pressure. The end joint is made in the old style of "ship lap joint" and is made possible by a web, or system of webs, which provides a backing for the mortar and an annular space is secured, which when filled with mortar, provides an absolutely sanitary joint. This is one of the main features of the block manufactured by the American Sewer Pipe Co. and is a vital point necessary to a successful hollow block sanitary sewer.

The mortar joints on the dove-tail sides are scratched to assist in retaining the mortar. The block are made as large as can be conveniently handled and have an inside area of approximately 270 sq. in. each, thus eliminating in a large measure the objectionable feature of numerous joints. The outer openings in the hollow block system of sewer construction are particularly well adapted to carrying surface water, which is taken into the sewer at manholes and are also of special value to the contractor when constructing a sewer in a wet trench, as, after the invert is laid, a drain is effected, which carries a large amount of water and leaves a perfectly dry sewer for the construction of the arch. This obviates the necessity of laying under-drains as is necessary in other sewer material.

In soil, where it is possible, the trench should be excavated as near the shape of the outer shell of sewer as feasible and the bottom block laid ahead for drainage purposes, and to line of grade. The successive tiers should be thoroughly tamped at the back, or better, mortar should be thrown back of the block and the block then settled into this mortar until it fits the template. A template should be used as high as the spring line, after which form for laying the arch is required and for which the manufacturers have designed a collapsible mandrel which greatly facilitates this work.

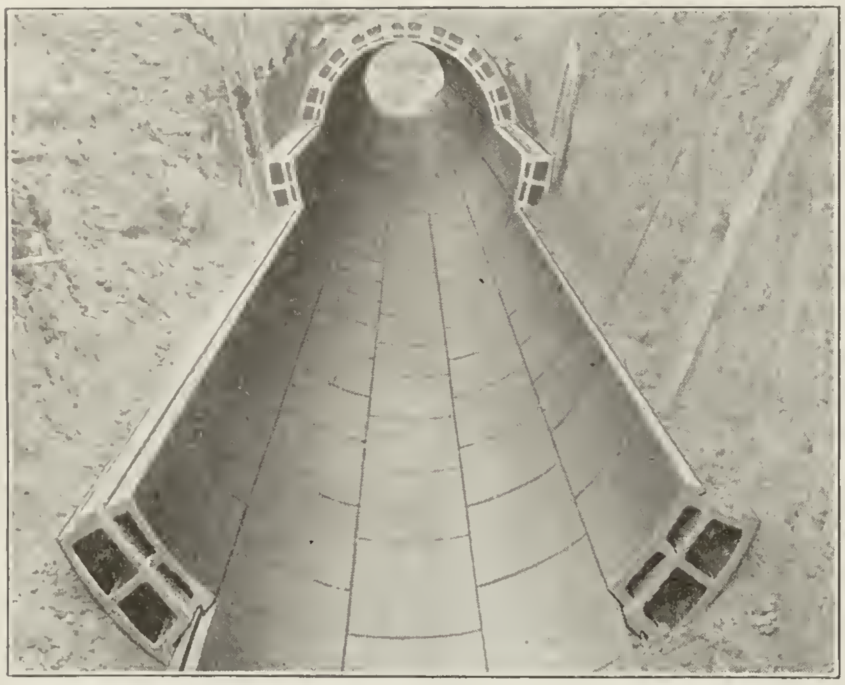


Showing Method of Turning An Arch in Building Sewer With Block.

The male and female dove-tail joints are so constructed that only the key block requires slipping in end-wise. All other block drop into place on the side.

Vitrified salt-glazed clay is of itself indestructible and care should be exercised in building the sewer to the end, that the completed work may be permanent and enduring. The importance of tamping thoroughly the outside of the block to the spring line of arch, cannot be over-estimated. When the soil is of such a character that the block cannot be properly supported by tamping, or other conditions render extraordinary precautions advisable, a concrete bed or foundation, extending from the bottom up to the spring of arch of a thickness of about six inches, will render the structure impervious to any natural influence. At the discharge or spill-end of the sewer, a concrete apron should be installed to insure against washing away of tamping or foundation. The manufacturers claim that it is possible, with this form of construction, to build more feet of sewer per day than with any other, thus keeping the building close to the excavation, facilitating back filling. One contractor recently laid 1,372 block or 98 ft. of 48 in. sewer in a day.

Owing to the perfect glaze and smoothness on the interior of this type of sewer, due to the material and care used in manufacturing the block, and the relatively few joints necessary in this form of construction, the flow of sewage is not unduly impeded and the manufacturers claim the efficiency is increased from 40 to 50 per cent over sewers built of other materials. This is of particular value in sewers of small degree of fall. The manufacturers offer in this improved hollow block system of construction, not the cheapest form of sewer construction in its initial cost, but one that embodies all the desirable features of sanitary or storm sewers, which are impervious to sewer acids and gases, unaffected by age or the elements, and of greater efficiency at a cost as moderate as any other good sewer material.



Showing Method of Constructing Sewer With Vitrified Block, Made by the American Sewer Pipe Co.

PREFER TERRA COTTA PIPE.

Testimony before the Pittsburgh, Pa., council recently showed a marked preference among builders and contractors for terra cotta soil pipes over those of steel. J. Buck, a prominent Pittsburgh builder, declared to the members of the council that steel pipe would corrode while terra cotta pipe would last a century.

This discussion was raised at a meeting called to consider the proposed new building code for Pittsburgh. The question at issue dealt with the mode of inspecting buildings and the matter of fireproofing. These have not been decided.

SEWER PIPE NEWS.

We are told that the Marshalltown Sewer Pipe & Tile Co., Marshalltown, Ia., is turning out some fine ware, which is noted for its smoothness and excellent glaze. The company secures its clay near the factory and is now putting in an elevated railroad to bring it from the pit in one and one-half yd. cars, which will be brought to the second story and dumped either into a dry pan or the storage house for use in bad weather.

The main building is three stories high, built of brick 8 x 122 ft., the grinding room and clay storage shed being 50 x 80 ft. The plant is well equipped with machinery made by the Taplin, Rice, Clerkin Co., Akron, Ohio, and includes one dry pan, two wet pans, sewer pipe press and dies for sewer pipe and tile from three to twenty four inches inclusive, four 28 ft. down draft kilns are already built, two 32 ft. kilns are under construction and four more will be built during the summer, making ten in all. Plans are being made for a 3-story addition to the main building, and the drying capacity will also be doubled. The company is considering equipping the entire plant with fuel oil burning in the near future. The concern has busy and prosperous season, notwithstanding that com-
already been shipping sewer pipe and tile and has booked some very good orders, and all indications point to a very
petition is keen in that section of the country.

SEWER PIPE PRICE WAR.

A Portland, Ore., newspaper states that the war there between sewer pipe contractors has reached a crisis, bids for the construction of sewers having been slashed to such an extent that there has been a reduction of approximately 20 per cent in the cost of laying during the past month. The Portland Cement Sewer Pipe Co., it is said, began the fight and reduced the price of pipe to such a low figure that all the other contractors have been underbid by them in all of the work. On a recent bid this company's bid was $14,000 less than the estimate of the city engineer and $10,000 lower than any proposal for terra cotta sewer pipe. The citizens are rejoicing over the saving to the property owners, but if their experience is similar to that of other cities where cement sewer pipe has been laid, the cost of relaying same when it begins to fail (which it is bound to do) will more than offset any saving in the original cost of the pipe.

ARIZONA SEWER PIPE PLANT.

A Phoenix newspaper states that the Alhambra Brick & Tile Co., Alhambra, Arizona, has made 24,000 ft. of sewer pipe for use in the Phoenix sewer system, 5,000 ft. of which have been burned and found to be all that could be hoped for and that an expert who inspected the tile and says it is equal to the best made anywhere. In connection with sewer pipe, brick is also made and this company has the contract for one-half million to be used by the American Smelting & Refining Co., for constructing a big reduction plant at Hayden. Finding that hauling the ware, by wagon from Alhambra to Phoenix was too slow and expensive, a thirty horse power Federal auto truck was purchased and two big steel wagons holding 1,250 seven-pound brick are hitched to the truck, which is kept constantly plying back and forth on the road between Alhambra to Phoenix. While two wagons are being unloaded, two others are being loaded, and two more are on the road. The above company also has the contract to furnish 65,000 for the new Federal building at Phoenix.

POTTERY NEWS

1911, GREATEST YEAR.

The year 1911 showed the greatest value for the production of domestic pottery yet recorded, according to Jefferson Middleton, of the United States Geological Survey, in an advance chapter from Mineral Resources, for 1911.

The value of the pottery marketed in 1911 was $34,518,560, an increase over the 1910 value of $733,882. This increase, however, came from the lower grades of ware and china, sanitary ware and electric porcelain supplies. The volume of business was possibly even larger than the value would indicate, for the general complaint, at least among the manufacturers of white ware, has been that the prices were low and the margins of profit small. It is a significant fact that the value of imports which consist almost exclusively of ware of the higher grades decreased $495,946, or 4.46 per cent. The continued improvement in quality of the domestic pottery ware, and the growing tendency to the use of American makes, will, in Mr. Middleton's judgment, insure a steady growth of this industry, as is indicated by the almost constant increase in domestic production and the decrease in imports. A noteworthy development in the geographic extension of the industry has been the apparent earnest effort to establish a pottery for the manufacture of white ware in the south, close to the principal sources of supply of the $8,401,941, and West Virginia, third, with $2,880,202. The raw materials.

Ohio produces the largest quantity of pottery among the states, reporting for 1911 wares valued at $14,775,265, or 42.80 per cent of the total; New Jersey was second, with exports of domestic pottery products in 1911 were valued at $1,401,366, an increase over 1910 of 34.53 per cent.

The William Brunt Pottery Co., of East Liverpool, has a deal pending for the sale of its plant to a Pittsburgh, Pa., concern which plans to manufacture aluminum ware in East Liverpool. There are now four inactive potteries in the western district, namely, that of the Goodwin Pottery Co., which has offered the site of its plant to the East Liverpool Board of Education for a new high school; the Warker Keffer Pottery Co., and the Brunt Pottery Co., all of East Liverpool, and the American China Co., at Toronto, O. One of the plants of the W. S. George Pottery Co., at East Palestine, O., was recently destroyed by fire, and so the list increases. Information from the East is to the effect that the New Jersey China Pottery Co. contemplates going out of the general ware market and going into the sanitary ware business. This information, however, is not confirmed at this writing.

A new pottery is to be started at Clarksburg, W. Va., by the Clarksburg Potery Co., which was recently formed with $75,000 capital stock. The incorporators of this new concern are H. W. Dickey, John A. Keenan, H. M. Brown, John L. Ruhl and R. S. Douglass, all well known business men of Clarksburg.

Announcement is made that the plant of the American China Co., at Toronto, O., has been sold for $50,000 to a Pittsburgh, Pa., corporation, which will turn the plant into one manufacturing rubber goods, roofing materials and paints. The National Hydro-Carbon Co., is the purchaser of the property.

C. J. Davis and Thomas Price, the latter having formerly been general manager of the American China Co., it is reported, have taken over the plant of the Ohio China Co., at East Palestine and will operate it.

While no statement has been made officially, it is generally understood that the plant of the East Palestine Pottery Co., which was operated by the Will S. George Pottery Co., of that place, and which was recently destroyed by fire, will be re-built. Insurance adjusters have been on the site, and because of the fact that the company did not have the sprinkler system installed in the pottery, it is said that the insurance on the plant was not as heavy as otherwise would have been the case. Between 125 and 150 people are employed in this plant when it is in operation.

With a number of potteries in the western district idle, many manufacturers think that this is the proper time for the trade to "get together." It is admitted that the cost of raw materials has been steadily advancing, conditions are constantly changing and even the buyers admit they would be willing to pay more for pottery, if they knew that all manufacturers would treat them alike. There has not been any talk of a "get-together proposition" for three years, the last time it was discussed was when a St. Louis corporation had auditors in East Liverpool, going over the ground.

Three electric porcelain corporations in the East Liverpool district met recently for the purpose of considering a resolution for dissolving their companies. Official notice with this end in view has been sent stockholders in each corporation. The companies are the George F. Brunt Porcelain Co.; the Anderson Electric Porcelain Co. and the Ohio Porcelain Co., the latter being the last electric porcelain company to engage in the business in East Liverpool. The Electric Porcelain Trust, which was formed here last year, took over the business of these companies, and two of the plants are now idle.

Much attention to details was given by the Edwin M. Knowles China Co., in the issuing of their new catalog and price list, which has just been received from the printer. The catalog is handsomely bound and is one of the most complete ever issued by a domestic pottery manufacturer.

A mammoth art pottery is to be built for the Royal Nippon Porcelain Co., at Askaina, Japan, near Tokyo, and the entire machinery equipment is to be of American manufacture. The order for this installation has just been placed by K. Okura, the managing director of the property, with the Patterson Foundry & Machine Co., of East Liverpool. The Japan plant will employ over 2,000 people, and it is possible that American machinists will be sent to Japan to install the machinery, the order for which is the largest ever placed in the United States for pottery machinery for export.

The $1,500,000 merger of the largest of the electric porcelain plants in Trenton, N. J., East Liverpool, O., and other localities in the west, and also at New Cumberland, W. Va., is an assured success, for a number of the individual corporations absorbed by the holding company will soon be dissolved. One of the absorbed plants, however, the Ohio Electric Porcelain Co., is idle, while a large addition is being made to the plant of the Electric Porcelain Co. in East Liverpool. The addition will be 68 feet in length, 45 feet wide and will be one-story high—built of brick.

NEW PLANT OF THE WELLER MFG. CO.

Every Convenience to Be Installed for Facilitating the Manufacture and Delivery of Products

The accompanying illustration shows the new home of the Weller Mfg. Co., which, when completed, will be devoted entirely to the manufacture of elevating, conveying and power-transmitting machinery for use in clay manufacture. This plant is situated on the northwest side of Chicago, at 44th avenue and Courtland street, and is admirably located for obtaining excellent shipping facilities. It will, when completed, cover over eight acres of ground and will be a model manufacturing plant in every particular. The principal buildings are arranged on the saw-tooth roof plan, providing excellent light for workers.

The present extensive Weller plant at North avenue has become inadequate to the needs of the business, and it is the intention of the company to operate the completed portion of their new plant almost immediately. This will be used for the manufacture of sheet metal work, spiral conveyors, elevator buckets, etc., and will relieve much of the pressure now existing at their present factory.

The balance of the new plant will consist of machine shops, office building, pattern shop, foundry and woodworking plant; and the work of construction is well under way. Needless to remark, everything connected with the plant will be absolutely up to date, and every device for facilitating the manufacture of their products and promptness of delivery will be installed. Time and labor saving machinery is the specialty of the Weller Mfg. Co., and it goes without saying that they will have a full quota of such equipment in their own plant. Much of it will be of their own manufacture and will include all the latest labor and time-saving equipment.

New Plant of The Weller Manufacturing Co., Chicago.

The Weller Mfg. Co. are to be congratulated on the business which has made such a plant necessary; and we wish them a degree of success in their new home, equal to that which has attended them in the old.

SAWYER BELTS HANDLED IN CHICAGO.

Chicago Rubber Company Now Has Direct Factory Representation for This Territory.

The Sawyer Belting Co. of Cleveland, Ohio, has made a change in its system of belt distribution to the trade, according to an announcement made in Chicago the past week. The sales department in the general offices has been discontinued and direct factory representation given the various stores of the United States Rubber Co.

In the Chicago territory, Sawyer belts will be distributed exclusively by the Chicago Rubber Co., of which L. C. Lawton is the president and general manager. The Chicago territory embraces the great middle west and a number of states in the south.

Walter Reece, for many years associated with the Cleveland office and one of the best known men in the brick and clay trade, has been placed in charge of the belting department of the Chicago Rubber Co. and will give his personal attention to it.

The Sawyer people believe this arrangement is going to give prompter and better delivery service. No announcement has been made as to the stores of the United States Rubber Co. in other cities.

In addition to the Sawyer belting, direct factory representation for all the mechanical lines of the Mechanical Rubber Co. of Cleveland has been given the Chicago Rubber Co. in this same territory.

NEW QUARTERS IN WINNIPEG.

The Winnipeg branch of the H. W. Johns-Manville Co., owing to their fast increasing business in asbestos, magnesia and electrical supplies, found it necessary to move into new quarters at No. 92 Arthur Street, Winnipeg, on or about June 1st.

This is a six-story and basement building, 100 feet deep and 50 feet wide, and will be occupied throughout by the Company's offices and store-rooms. By reason of this move, a much larger and more complete stock of goods will be carried on hand than heretofore, and a larger force will be employed to look after the Company's interests.

CONVINCING ADVERTISING.

In an unusually neat and attractive ad in this issue, the C. W. Raymond Co., Dayton, Ohio, appeals to the five senses, seeing, hearing, tasting, smelling and feeling, in describing the merits of the Raymond continuous kiln. According to the ad, "to taste the sensation of a snug fat dividend at the end of the year, its comforts, its luxuries and its joy rides"—one should invest in a Raymond continuous kiln. Many satisfied users have enjoyed this sensation and are loud in praise of this type of kiln.

The brick salesman who makes claims he cannot back up is a weak competitor of the fellow who deals in facts.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

L. H. Johnson has disposed of his interests in the Polson Brick & Tile Co., Polson, Mont., to his former partner, John Barre. The latter will begin operations at the plant immediately.

The Manteno Brick Co., Manteno, Ill., is enjoying a prosperous season. Although making daily over 250,000 brick, it is unable to supply the demand.

The Independent Brick Co., Trenton, N. J., reports several large contracts on hand which will keep the plant running to capacity for some months.

The city of Cleveland, O., has received word from the Ohio State University that good brick can be made from the clay found on the Warrensville farm. The council has authorized the expenditure of funds for a brick plant.

The American Pulverizer Co. has moved its general offices from 410 Mermod-Jaccard building, St. Louis, to the factory at 31st and Ridge Streets, East St. Louis, Ill. This is done because of the inconvenience of handling two organizations, according to a statement issued by the concern.

The Greater Des Moines Committee, Des Moines, Ia., adopted a report by a special sub-committee indorsing the Acme Roofing Tile Co., which is establishing a half million dollar factory in Des Moines.

Machinery has been purchased for the new plant of the Key-James Brick Co., which is under construction at Chattanooga, Tenn. An improved waste heat system will be installed and the kiln battery comprises 14 round down draft kilns. The company is capitalized at $50,000. It is understood that the plant will be ready for operation in 60 days. The officers are W. T. James, president; John D. Keyes, secretary and treasurer.

Operations at the new plant of the Wm. H. Grothe Co., York City, Pa., will be started shortly.

The plant of the J. C. Lincoln Brick Co., at Newfield, Conn., recently damaged by fire, has been repaired and is in operation again.

The plant of the Hartford, Conn., Brick Co., is now running full time, the chief product being building brick. The officers of the company are H. C. Woodford, president; Leon L. LeClaire, secretary, treasurer and manager.

The Standard Brick & Tile Co., manufacturers of sandstone brick and roof tile, has established its headquarters at Colton, Calif., and will make that its principal place of business. The officers are: Charles A. Rolfe, president; F. A. Alexander, vice-president; Earl F. Van Luven, secretary and L. C. Newcomer, treasurer.

The Eldon Brick Co., of Eldon, Iowa, was recently awarded the contract for furnishing pressed brick for the new high school at Fairfield, Iowa. This firm's well known "Trott" brick are to be used for the exterior of the building and also the interior of the gymnasium. The same kind of brick were used in the Washington, Iowa, high school building and a number of fine residences throughout the state and have proven entirely satisfactory.

Theodore Lewis Holbrook, president of the new Washington Brick Co., Washington, D. C., died suddenly June 10. Mr. Holbrook had been in the brick manufacturing business for about thirty-five years. He was formerly president of the old Washington Brick Co., predecessor of the New Washington Brick Co. When Mr. Holbrook first became connected with the company, only a small plant was in operation and the growth of the business was largely due to the skillful manner in which he handled the company's affairs. He is survived by a wife and three daughters.

H. C. Cooper, a Chicago railroad man, has formed a new company with a capital of $50,000 to manufacture clay car seals. The plant will be located at Zanesville, O.

M. M. Bushong, formerly general manager of the Standard Vitrified Brick Co., Coffeyville, Kansas, has accepted the general management of the Fort Scott Paving Brick Co.'s plant, Fort Scott, Kansas.

Word comes from our Omaha correspondent that hundreds of visitors stop to admire the exhibit of the Hydraulic Press Brick Co. in the Barker Bros.' window at 1609½ Farnam St. It is a most beautiful display of Omaha-made brick for mantels, building and ornamental purposes, both interior and exterior, showing the wonderful possibilities in store for artistic brick construction. An interesting feature of the exhibit is a guessing contest on a basket of brick chips in the window.

J. F. Naymire, of Waurika, Okla., has formed the Kiowa Pressed Brick Co., of Kiowa, Okla., with a capital stock of $10,000. The company will be incorporated and is organized for the manufacture of face, ornamental and common brick.

On the ground that the railroads of the state of Indiana which sought to increase freight rates on drain tile were unable to show the necessity of such increase, and on the further ground that drain tile is a necessity to the proper development of the farm lands of the state, the state railroad commission has refused to permit a proposed scale of freight rates submitted by the railroads, to become effective, and has issued an order making the maximum rate the same as that for the Central Freight Association territory. The roads affected by the order are the following: C. H. & D., Big Four, C. & E. I., Chicago, Terre Haute & Southeastern, Chesapeake & Ohio, Chicago & Erie, Nickel Plate, Pennsylvania, and the Vandalia.

Boston deliveries on old orders in the brick business are brisk. New contracts are not very numerous but manufacturers' confidence in the future has not been in the least shaken by this fact. There are many building projects which in the aggregate will call for a large quantity of brick. Two new apartment hotels are among the number.

The strike at Perth Amboy, N. J., among the employes of the Terra Cotta plants, is about settled, and the companies have assured the men an increase in wages.

The Indiana Brick Co., Anderson, Ind., whose plant was destroyed recently by fire, has decided to locate elsewhere. Numerous propositions have been received, but it is not definitely decided where the company will resume operations.

J. M. Cutshall, a well-known contractor of Brazil, Ind., is over-seeing the construction of the new plant of Albion Shale Brick Co., at Albion, Ill. Construction work was begun about April 20th, and all foundations are complete for the installation of the big engines and dry pans. The dryers are almost completed, as are also the foundations for the main buildings, and the immense chimney 150 feet high for the stoker boiler.

The entire plant will be of fireproof construction throughout, and it is understood will be one of the finest plants in the country. Plans for the entire plant were made by the L. E. Rodgers Engineering Co., of Chicago, Ill. The plant property comprises a tract of 80 acres of land adjoining the plant, underlaid with shale of a superior quality. An abundance of water makes an ideal location.

while the splendid farming territory affords an excellent market for their output.

Paving block and hollow ware will be the chief products, the plant having a capacity of 100,000 per day.

The Pacific Face Brick Co., with plant at Wilamina, Oregon, and offices in the Commercial Club Building, Portland, Oregon, is furnishing the brick for the new courthouse at Hillsboro, Oregon, for Dr. Rininger's hospital and for the Strong Building, in Portland; also for the Masonic Temple, at Salem, Oregon, as well as for many other prominent buildings throughout the West.

Clay manufacturers of Austin, Minn., have complained to the Minnesota State Railroad and Warehouse Commission, that freight rates from their city to points in Western Minnesota were discriminatory and favored Mason City, Ia. Pending the settlement of the case before the Federal Supreme Court, the old rates have been restored.

Frank P. Pohlmann has sold his brick yard in Northwestern Davenport, Iowa, to the Northwest Brick Co.

Mr. F. A. Dickinson, who in April, took charge of the management of the Fairmont, (Minn.) Drain Tile & Brick Co., states that after extensive experiments with clays from Mason City, Iowa and Druer, Minn., some very good results have been secured. Extensive clay beds have been purchased at Blue Earth City, and a spur track is being put in which will greatly facilitate the shipping of clay. Other improvements have been installed, including a dry pan, steam shovel and accessories, and the plant will resume operations about July 15th. The company states that from present indications 1912 will be a banner year in the clay products line. All its stock has been disposed of and there is a strong demand for building material in that locality.

NEW PLANTS PLANNED.

New brick and clay products plants to be erected at an early date, are:

At Kiowa, Oklahoma.—The Kiowa Pressed Brick Co., has organized with a capital stock of $10,000. The plant will soon be placed in operation.

At Montreal, Canada.—The Canadian Brick Co., Limited, capital $100,000, will shortly commence operations.

RECENT INCORPORATIONS.

At Cleveland, O.—The H. McCarty Fireproofing Co. was recently incorporated with a capital stock of $25,000. The incorporators are: H. McCarty, F. S. McCarty, D. L. Schwab, Geo. A. Waddle and Perry D. Caldwell.

At Petersburg, Va.—The Petersburg Terminal Co., capital stock $5,000 to $25,000. Incorporated for the manufacture of brick and like products.

NEW YORK.

All Clay Products Active in the East—Plants Operating to Full Capacity.

New York, June 24.—With every manufacturing plant of any consequence operating as near to 100 per cent. of capacity as the shortage of labor will permit, the clay products industry in the East is in a fairly satisfactory condition, all things considered.

Prices in all lines were well sustained when the summer season formally opened last week and, judging from present demand, they will be held firmly until fall, anyway, because the supply probably will not be excessive at any time this year.

The reason for this state of affairs is the scarcity of labor on the yards. Vast construction enterprises, such as the rushing of work to completion on the Catskill aqueduct, the big railroad extension operations in the Hudson valley, the water tunnel digging and subway operations in Greater New York, the big meadow development work in New Jersey, not to mention the big terminal operations on Long Island, have caused a severe drain upon the unskilled labor market. The result is a scarcity of labor on the brickyards, in both the Hudson and Raritan river valleys.

This condition has become so acute that manufacturers find it difficult to have barges loaded. Their only recourse has been to keep their machines and yards going during the day time and load at night or to load during rainy weather, using the same gangs in either case.

During the last four weeks, sales and arrivals of brick barge loads have been about even. Since new brick has been coming in, the arrivals have been only one or two in excess of sales, showing that the market is barely being taken care of. Prices therefore have been high, $7.00 ruling at top on Hudsons, and at times, Raritans have also touched that figure. Matteawan brick also have been bringing high prices during the last few weeks, due probably to the fact that continued manipulation of the common brick market is driving orders into new fields. This latter brick is going into such big operations as the Woolworth and Grand Central station operations, although it is reported that other Raritan brick is also moving in to insure good delivery service.

Operations Hampered by Scarcity of Laborers.

In the Haverstraw district of the Hudson, there is a conservatism of manufacture that bodes well for a full season's plant operation. The number of available laborers is far below requirements. There have been some labor troubles, but in each case the situation was firmly grasped by the manufacturers, who were able to show the men that they were paying as high wages as last year. At the present time, it is a problem to get sufficient help, according to reports received from that section, even though negroes are being brought from the south to work on the yards.

In the Newburgh district, the yards are running at about 85 per cent of capacity, although the manufacturers would like to operate all their machines if they could secure help enough. Barge loading is accomplished under difficulties. The unrest that cropped out among the laborers earlier in the season has been quieted, most of the men having gone back to work.

Up as far as Kingston, the manufacturers are burning brick and shipping them into the market a little more conveniently than the yards down the river, because there is not such a great demand for waterworks labor up there and brickyard labor is reported to be more plentiful.

Heavy Shipments From Raritan Valley.

The situation in the Raritan valley is different. Brick is being made in generous quantities there and shipments are being made in heavy volumes for New York and general New Jersey consumption. This territory also includes Matteawan, which, during the last few months has loomed up as an important brick distributing center on the market. The labor problem is not so acute as it is up the Hudson, but they have been menaced with a big strike in the heart of the clay products district of New Jersey, Perth Amboy, and it has required considerable diplomacy and engineering to keep the brick and terra cotta men from following other laborers in other industries into the street.

The recent destruction of a large part of the Didier-March factory at Fords has supplied brick manufacturers with extra labor so that, aside from the recent strike scare, clay products interests there have, for the moment, an advantage over the Hudson river manufacturers, due perhaps, in part, however, to unnatural conditions prevailing in this city.

The hearings in the case of the people against the Greater New York Brick Co., are still in progress. Preparations are being made by the counsel to draw the investigation to a close and it is believed by dealers and others that a decision will be handed down sometime in July. In the meantime, the entire brick situation here in New York is in a state of unrest.

There is little brick being sold here today on future contracts longer than thirty days. In the case of the Raritan river manufacturers they are holding pretty rigidly, we are told, to list prices on the belief that the New York brick situation will not clear sufficiently this summer to warrant any reduction on present quotations. The Hudson interests look upon the situation in the same light and the result is that spot business is the rule all along the line, even in Long Island.

Coupled with this fact is the unexpected heavy filing of new building plans. There has been no cessation of heavy filing, and, if anything, there is a gain, especially in the suburban district. In Greater New York, the filings for new buildings on June 21 for this year totalled 6,877 while the filings for a corresponding period last year totalled only 6,690. In Newark, the filings this year as compared with last year are fewer, but the values run up into much larger figures because of the better class of construction that is going on there, principally because of the constantly increasing use of burned clay fireproofing.

Other Clay Products.

Front brick is in a very active market. There is little change from list quotations on the business taken, even on large orders. There are some distributors who will give concessions on special grades of brick or special colors, but standard brands or widely known brick, are bringing practically list prices. Enamel brick is quoted close to list.

The terra cotta industry is very active. The Atlantic Terra Cotta Co. is drawing near to the completion of its big contract to supply the facade material for the big Woolworth building and the National Fire Proofing Co. is rushing deliveries on fireproofing and partition blocks. The building is now fireproofed up to the 49th floor of the tower and the terra cotta is at the 42nd floor.

Both these companies are proudly pointing to the fact that their product in the completed building will mark the highest point to which burned clay has been carried in any single structure in history.

The financial situation here in New York as it affects building construction is strong. There has been no general withdrawal of funds, the Metropolitan Life Insurance Co. having made a loan only last week to the L. & M. Holding Co. for $275,000 on a new apartment house, a type of structure which has been reputed to have been very much overbuilt in New York and the New York Life Insurance Co. has made arrangements for a half million dollar loan to Julius Tishman & Sons for the erection of another new apartment house. Both of these loans were made during the week of alleged paralysis in building construction, pending the outcome of the political conventions and upon buildings which, real estate people had said were already too numerous.

Instances of this kind show only too plainly, what the fundamental building situation here in New York is despite the fact that materials are high, interest rates stiff and real estate dead.

These things should encourage the brick and general burned clay industry. It should be the means of forewarning manufacturers that there will be a very large fall demand for brick for the reason that a large proportion of the 60 per cent of the filings now being made, are not going ahead until after the November elections, which will mean a heavy call for basic building materials of all kinds after that time.

TEXAS.

Extensive Building Plans Call for Large Quantities of Brick.

Austin, Texas., June 27.—Activity in the building trade in all the larger cities in Texas, as well as the smaller towns kept up remarkably well during the month of May. Reports of the aggregate value of the buildings for which permits were issued in the nine larger cities of the state give a total of $1,607,135 for the month. This sum is made up as follows:

San Antonio, $571,769; Dallas, $310,932; Houston, $276,035; El Paso, $173,053; Waco, $150,000; Fort Worth, $40,535; Beaumont, $32,484; Galveston, 27,000; Austin, $25,327.

In most of these cities building plans of extensive size are on foot. Several large office buildings will be begun in San Antonio, Houston, Dallas and Fort Worth within the next few weeks. Plans for these structures are being prepared and arrangements are well advanced for starting work upon them.

One of the features of the present building activity is the attention that is being given to the erection of apartment houses. This is particularly true of San Antonio which is a large winter tourist resort. In Houston also the demand for modern apartment houses is being rapidly supplied.

The hotel movement which was inaugurated two or three years ago in San Antonio, Houston, Galveston and Dallas is spreading to many of the smaller towns. It is claimed, no state in the country has made greater progress in hotel improvements than Texas during the last three years. South Texas towns have taken the lead in this respect and there is scarcely a community of 3,000 population and upwards in that region that does not boast of a hotel building of first-class construction, appointments and service. In two or three towns of less than 2,000 population there are hotels that would do credit to cities of 25,000 population.

An increase in the demand for brick for building purposes is reported by manufacturers of the southern portion of the state. The marketing of more than 6,000 carloads of vegetables since the first of March has brought great prosperity to South Texas. Large amounts of money are being put into new brick store buildings, residences and various other improvements.

The Denton Press Brick Co. is doubling the capacity of its plant near Denton, Texas. It will have an output of 44,000 brick per day when the additional kilns are installed. It will then have eighteen kilns in operation.

The South Plains Tile Co. is installing a factory at Plainview for the manufacture of tile to be used in drainage and subirrigation.

Loud complaint is being made by prospective builders in Tampico, Mexico, over the high prices that are charged there for brick and also because of the inability to get the material in quantities desired. Tampico has not suffered any from the revolutionary disturbances that have prevailed in other parts of Mexico. It is having a wonderful growth on account of the development of adjacent oil fields and the establishment in that section of many industrial enterprises by Americans. It is now the chief deep water port of Mexico and besides its standing in this respect it has an exceedingly rich agricultural and oil bearing territory that extends back of it for 200 miles. The wonderful increase of business in Tampico has caused a great building boom. Recently the contract was let by S. Pearson & Son, Ltd., of London, England, for the erection at Tampico of a seven-story office building which will be of steel frame and brick construction. The Wm. P. Carmichael Co., of St. Louis, has this contract. In the city of Tampico and territory immediately adjacent thereto are more than 5,000 Americans. In a business way they are rapidly Americanizing that part of Mexico, and it is claimed that a splendid opportunity exists for the establishment of a large brick plant near that city. There is said to be an abundance of clay suitable for the purpose and besides the local market there could probably be built up a good foreign trade for the brick. At present, the brick that are used in Tampico come from Monterey, a distance of 322 miles.

PENNSYLVANIA.

Activity in Building, Sewer and Highway Construction Causes Heavy Demand for Clay Products.

Pittsburgh, Pa., June 26.—Activity in the building brick line; activity in new sewer construction and in highway improving results in every brick and sewer pipe selling agency in this section of the Keystone state being keyed up to a high pitch. In short—the clay product business is good—especially in this part of the Western Pennsylvania, Eastern Ohio and Northern West Virginia territory.

Selling agencies, wherein a specialty of building brick is made, have advised "Brick and Clay Record" that thousands of dollars' worth of new construction work is coming to the surface—such as schools, churches, lodge buildings and homes.

Those selling agents who go after the street and highway work for pavers report the demand for their products the best ever known, with the result that all of the plants are working to the limit of their capacity.

This reacts upon the sewer pipe manufacturers, for wherever there is construction work going on, the sewer pipe business is likewise active.

In this city proper, the records for 1912 will likely show it to be the greatest year for building in a decade. Recently it was recorded in this journal that the City of Pittsburgh was spending millions of dollars in lowering the Fifth avenue "Hump."

As soon as the "Hump" is cut away building will be begun. Acre after acre of business houses, churches, schools and small houses, either have been or are being razed. In the place of these will go up modern brick and fireproof business houses and other modern buildings. The demand for clay products in this city will be the most extensive, experienced in years because of this municipal improvement.

When brick were used in the construction of the main sewer in Wood street, of this city, over 80 years ago, doubt was expressed in later years that "it would hold." But it has, and not a dollar's worth of improvement has been made on this trunk sewer since. Then came the construction of the large skyscrapers along Wood street, and the foundations for these buildings went far below the sewer line, with the result that pumps had to be installed in the buildings to create an outlet into the large brick sewer. With the removal of the "Hump" comes a similar experience with Grant street, where the same conditions exist, and the brick construction of nearly a century ago has been found to bear up better than any other form of construction.

Face brick manufacturers, having offices in this city, are a unit in the opinion that business is good and that all plants are on the real active list.

Concerning the refractory brick lines, the extensive operation of all steel and iron mills together with furnaces is keeping such brick plants operating to capacity, with orders enough on file, to keep them in operation for many months to come without any business being booked in the meantime. The fact is, the iron and steel business is better now than it has been since 1907.

Building supply dealers—those who buy brick and sewer pipe, and who act as agents for many individual plants gave Saturday, June 27, over to a day of enjoyment. They went to Coney Island Park, on Neville Island, overlooking the Ohio river, where a program of sports and "eats" was "pulled off." Scott A. White, the well known "clay" merchant, with offices in the Lewis block, was a member of the committee on arrangements for this event.

Operations have been resumed at the plant of the Middletown Shale Brick Co., at Middletown, Pa., which has been inactive for several years.

J. H. France, of Phillipsburg, Pa., general superintendent and one of the heavy stockholders of the General Refractories Co., which controls plants in this state and in Kentucky, has taken over the plant of the Karthaus Fire Brick corporation at Clearfield, Pa.

Fire destroyed the main buildings of the plant of the Center Brick & Clay Co., at Orviston, Pa., and the reconstruction of the building is now in progress. Building brick and pavers are the product of the plant, and the officers of the company are: President, Judge Orvis; secretary-treasurer, Harry C. Mann, and general manager, I. C. Harvey.

Improvements are being made to the plant of the Kittanning Brick & Fire Clay Co., at Nealton, a suburb of Kittanning, Pa. The main offices of the company are in this city. With the improvements completed, the capacity of the plant will have been increased.

A charter was granted June 25 to the Royalton Brick Co., at Middletown, Pa. L. V. Halberstadt, general manager of the Reading Brick Co., of Reading, Pa., is one of the organizers of the new company.

An order has just been booked by the Keystone Clay Products Co., of Greensburg, Pa., for 600,000 face brick, which are to be shipped to Detroit, Mich., for the new home of R. C. Hupp, the well known automobile manufacturer.

R. C. Hupp came to Greensburg to personally inspect the output of the local concern and said he found the Keystone Clay Products' output the best in quality and most handsome in appearance of any others.

Lock Haven, Pa., people who are interested in the Mt. Union Refractories Co., at Mt. Union, Pa., made an inspection of the plant early this month. Work on this new plant was started last year under the direction of President R. P. M. Davis, who is also general manager of the plant. Mr. Davis was formerly connected in an official capacity with the Harbison-Walker Refractories Co., of this city, and while with that concern made several important trips to European countries in the interests of the large corporation.

The plant of the Freeport, Pa., Clay Products Co., is now working to capacity, and has a well filled order file. Shale brick is made. The plant has a capacity of 10 kilns.

The city council of McKeesport, Pa., a few days ago gave an order for five cars of pavers to the Bayton Fire Brick Co., at $8.75 per thousand.

Operations have been begun at the new plant of the Waynesboro Brick & Supply Co.'s works at Waynesboro, Pa. Two kilns have been erected and others will be put up at an early date. The plant has a capacity of 36,000 brick per diem.

It is reported that the various brick plants in the vicinity of Bradford, Pa., have recently booked orders aggregating 250 cars of paving brick to be shipped to New York.

Thomas White, general manager of the Meredith Brick Co.'s plant at Reynoldsville, Pa., has placed the new plant in operation. It is a model one and the latest improved machinery has been installed.

With the re-organization of the company completed, and the order file containing enough business to keep operating until fall, the plant of the National Glass Brick Co., at Connellsville, Pa., resumed operation June 17. The capacity of the plant has been increased to 25,000 glass brick per diem. Over 125 men are now employed.

PHILADELPHIA.

Beds of Fine Clay Underlying Quaker City Produce an Annual Output Valued at $1,800,000.

Philadelphia, Pa., June 24.—When it is stated that a stratum of the finest clay in the world for brickmaking, underlies Philadelphia, Pa., it is not hard to understand why this city is one of the three great brick manufacturing centers of the United States, and that her product in this line is favorably known wherever brick and tile are used. Every year her brick yards turn out about 225,000,000 red brick, which, together with her tile production, represent an annual value of $1,800,000.

The first brick houses built in Philadelphia were constructed of brick imported from England, but as excavations disclosed the finest quality of brick clay right at home, it was not long before the industry was firmly established on a paying basis, and the colonists were independent of the mother country for their building material.

It was early in the eighteenth century when the first brick were manufactured in Philadelphia, and from that day to the present time, her demand for this class of building material has been met almost exclusively by local manufacturers. About 7,000 houses a year are built in Philadelphia, mostly of brick, yet the builders are rarely obliged to seek them in other markets.

The quality of clay underlying Philadelphia is particularly well adapted to the manufacture of the ordinary hard red brick, and most of her output is of this quality. It must not be inferred, however, that this style alone is made here, for of late years, the manufacturers have turned their attention to the production of fancy styles, and it may be pertinent to say here, that they acknowledge no superior in the manufacture of artistic brick.

For more than 150 years, Philadelphia brick were handmade, but her manufacturers, always enterprising in this as in other lines, were not slow to adopt the use of machinery, when about twenty-five years or so ago, its use became general. Brick machines have been so perfected, that the latest type is capable of turning out 40,000 brick a day.

About 15,000,000 ornamental brick are made every year in Philadelphia. Few are sold elsewhere, however, her building absorbing this output, as well as the millions of ordinary red brick made here.

The vitrified brick used in street paving and for some other purposes, are not made in Philadelphia, as they are made of clay of a different character.

An important branch of the brick manufacturing industry in Philadelphia is the making of firebrick, the great number of foundries in and near the city providing an excellent market for this product.

CHICAGO.

Strongest Demand for Brick in the History of the City. All Plants Running to Full Capacity.

Chicago, June 26.—The same strong demand for brick continues in this ctiy. There has been no falling off, so far as orders are concerned, and they are still as active as they have been in the past. It is said that there never has been a period, in the history of the city, when there has been such an active demand for brick. The manufacturers could ask for nothing more, and they are doing all that is possible to meet the demand.

There is not a yard in or about Chicago that is not running to capacity, and each has all the orders ahead that can possibly be managed. In respect to building operations there seems to be unusual activity. In and about Chicago, one finds new buildings going up of every description. This causes, not only a brisk call for building brick, but for face brick as well, and for other kinds of clay products.

Street improvements are also in evidence, and there has been a very nice demand for paving brick. Sewer pipe, and sewer brick, coping, flues, fire brick, terra cotta and fireproofing; all these are moving with a vim that denotes the real strength of the demand. Prices on most of these commodities are holding up well.

If the present activity can be taken as an indication of the future, we have much to feel grateful for, and there is small reason to doubt that there will be any curtailing of orders. When building is active in all sections it is certain that there will be no cause for alarm in any other lines of industry in the country.

The development of the fireproof idea has become more and more noted here, and the people have begun to realize the merits of this form of construction.

It has not been possible for manufacturers to accumulate any stock on the yards, and while only a minimum amount of complaint is heard with reference to caring for orders, it has nevertheless been necessary for the operators to work early and late to devise means for this possibility. It has thus far caused only a limited amount of complaint for the manufacturers, and considering all things there is much to be said in favor of the way that these orders are being cared for by them.

We regret to announce the death of Mrs. Mary Schlake, mother of William E. Schlake, president of the Illinois Brick Co., which occurred on June 14, at her residence, 2812 North Ashland avenue. She was seventy-five years of age and was much beloved. The funeral was held from the residence and the burial was in St. Lucas cemetery.

The Illinois Brick Co. reports conditions as very favorable, and the plants are being operated to capacity. There has been no decline in orders thus far, and as far as can be noted now there will be ample to keep the company quite rushed for some months as yet.

Everything is booming with the face brick lines according to the reports heard at the offices of the Bonner & Marshall Co., and it promises well for the future. There have been not only large orders in ample abundance, but small orders too, and plenty of them. It is these small orders that frequently count for so much, and they are always welcomed for the profits are not infrequently more than on the larger orders.

The American Terra Cotta & Ceramic Co. is receiving a number of nice orders these days, and there has been a tendency shown by the company to specialize on the better grades of work in architectural terra cotta. There has been some very attractive and very artistic work for the better class of buildings manufactured by this company.

The Purington Paving Brick Co., at the local office, notes an improved demand for paving brick within the past few weeks. There has been a larger demand for this line of brick than was noted earlier in the season, and the outlook is all that could be expected.

Since moving into its new offices on the ninth floor of the Chamber of Commerce Building, the Curtis Brick Co. has been making some changes in its display, the result proving exceedingly attractive. The Grant Park plant, that was destroyed by a cyclone several months ago, has been rebuilt, and is now in operation. The company has more orders than it is possible to fill, and the two plants are operating to capacity. From the present outlook it would appear that there will be plenty to keep the plant busy, for at least several months longer.

All reports at the offices of the Jenkins & Reynolds Co. give promise of a brisk demand for the year. Face brick are being sought for many large and small jobs, and the demand has been so active that there is a decided feeling of gratification and the face brick man has no possible cause for complaint.

Mr. W. P. Varney, of the Chicago Hydraulic Press Brick Co., notes with pleasure the fact that there has been as much business coming their way as the company can handle from this end of the line. There has been a revival in trade.

The S. S. Kimbell Brick Co has plenty to keep it on the jump. Orders have been coming in so fast that the company has no reason for anything but feelings of thankfulness and good will, the activity in business showing no signs of a decline.

WASHINGTON.

Abnormal Demand from Canada for Clay Products Proves Helpful to Northwestern Market.

Seattle, Wash., June 25.—The yards situated on water points here, are all doing a very good business selling their goods at a fair profit. The yards in the interior report that supply exceeds the demand by about 75 per cent—so that brick are being sold at about cost. This, with a surplus of cull pavers, means pretty bad picking for yards situated at railroad points.

The plant of the Queen Brick & Lime Co., for which Mr. E. J. Shaw has been receiver, has been turned back to the original owner, the Steele & Steele Brick Co., the former company being unable to meet the payments as agreed upon.

The plant of the Redondo Clay Co., which was purchased by the Miller Bros., Tacoma, has been placed in operation under the management of S. C. Munson, and will be quite a factor in the market before long.

The Everett Brick Co. is doing a nice business in common and building pavers. Mr Shafer, the owner, is very optimistic as to business for the present season.

The Builders' Brick Co. has secured the order for the common brick for the forty-two story Smith building that is being erected in Seattle, and also the hollow wall partition tile. This will be the largest single order the company has placed this year, and will keep the plant busy for some time without additional orders.

There is an abnormal demand for clay products from the Canadian side which is very helpful to the clayworkers of this section.

W. C. Mitchell, who was formerly superintendent for the Denny-Renton Clay & Coal Co., at Renton, and later in the engineering and constructing business in Vancouver, B. C., is now superintendent of the Builders' Brick Co.'s plant, Seattle.

PACIFIC COAST NEWS.

Activity in Building Circles Reflected in Brick Market.

San Francisco, June 24.—Local building records indicate a condition of great activity, which is reflected to some extent in the brick market, though manufacturers with few exceptions, are by no means rushed. As they are not forcing their materials on the market at the expense of profits, however, conditions are as good as can be expected, as it will be many years before requirements catch up with the aggregate producing capacity. Contracts were let last month for buildings valued at $3,153,910, almost as large a sum as for the month previous, while in Oakland, work is unusually active. Plans have been accepted for the new city hall in this city; the municipal auditorium plans will probably be adopted soon, and contracts for these buildings are likely to be placed before the end of the year. There is considerable activity on industrial plants in outlying towns, requiring considerable quantities of both common and fire brick.

The common brick market is quite steady on the old basis of $7.50 per M. The demand is gradually improving and liberal supplies are always available, but nothing is being dumped onto this market below the ruling figure. The new Brick Builders' Bureau is getting actively to work, and is already producing results. The principal effort at present is with the municipal authorities in this and neighboring towns, who have been showing an undue preference for other forms of construction. The brick men were unable to get the work on the Geary street car barn, but are working for a share of the business on several projected street tunnels.

Brick plants throughout the interior of the state, at a distance from the local market, are now in full swing, and reports from many districts indicate an unusually active demand for brick in the smaller towns. In Oregon and Washington several new plants are being established.

The California Pottery Co.'s plant in Oakland is being further improved by the addition of two new kilns and a dry pan. The opening of a down-town office in San

Francisco has been a very successful move, resulting in a noticeable increase of business.

N. Clark & Sons, terra cotta manufacturers, have just completed deliveries on the Walker building at Salt Lake City, Utah, and have commenced to bring material over from their Alameda plant for the St. Ignatius church. This job, on which O'Connor & Collins have the bricklaying contract, calls for about 600,000 gray pressed brick and a large amount of special cream terra cotta. Deliveries will be rushed, as the company has some other important jobs pending.

The Los Angeles Pressed Brick Co. has just completed the rebuilding of its paving brick plant at Santa Monica, Cal., and will be able to deliver as many as 40,000 pavers per month. During the shortage of pavers, the city of Los Angeles has been using granite for gutters, but it is expected that specifications on pending contracts will be changed to brick, effecting a material saving. The company, however, is prepared to make several other products which are more profitable than pavers at this plant. The company's plant at Richmond, Cal., is extremely busy, having a steady run of business from San Francisco, as well as some good contracts in its own town, where a large Standard Oil refinery and other industrial plants are putting in many improvements.

The Livermore, Cal., Fire Brick Co. is beginning to diversify its products, and turned out its first face brick about the middle of the month. If the material proves satisfactory, the company is assured of an order for 450,000 of these brick for a building in San Francisco.

The city of Los Angeles has been greatly troubled for the last few weeks by a strike in the building trades. The bricklayers have been among the few men to stay at work, and have submitted the question of supporting the strike to their national officers.

The Golden Gate Brick Co.'s pressed brick plant at Stockton, Cal., is making up a large amount of material, and some important jobs are expected. Many small orders are being taken both for this material and the company's sand-lime brick made at Antioch, Cal.

The terra cotta contract for the new Crocker estate building on Market street, this city, has been taken by the Steiger Terra Cotta & Pottery Works, with offices in the Mills building. This company also reports a heavy run of sewer pipe work being one of the largest manufacturers in this line on this side of the Bay.

The Oakland Paving Brick Co. has had Mr. Penfield, of the American Clay Machinery Company, looking over its plant near Niles, Cal., with a view to making alterations which would place the plant on an operating basis.

According to recent reports from Tampico, Mexico, brick prices there have doubled lately. It is said that the Huasteca Petroleum Co. is taking the entire output of the Tamos yards, and the Waters-Pierce Oil Co. of the Victoria yards, while small contractors have to bring in supplies from Monterey. It is said that there is a good opening for another brickyard at that place.

I. L. Blinn, president of the Whittier (Cal.) Brick Co., has resigned, and C. C. Buffington has been chosen in his place. At the end of this season the yards will be completely remodeled, moved to another part of the company's land, and a lot of new machinery will be installed.

The Long Beach, Cal., Brick Co. has the contract for material for the new Globe Theatre at that place.

Henry Luhrs and Geo. Brown are building a new tile factory near Carson, Nev. Until their machinery arrives, they will burn hand-made brick for their own use. They anticipate a heavy demand for irrigating tile in that vicinity.

The old Gray Bros. brick plant at the foot of Twin Peaks, in San Francisco, suffered a fire loss of about $25,000 on the night of May 25. The blaze was caused by overheated dryers, and was difficult to control, as the place was not easily accessible to the fire apparatus.

John Preschem is putting in a new brick plant at Springfield, Ore., which will start about July 1 with a capacity of 40,000 daily. Mr. Preschem was formerly connected with a brickyard at Roseburg, Ore.

The Bend Brick & Lumber Co. started a brick plant early in May at Bend, Ore., and turned out about half a million brick the first month.

The Chewelah, Wash., Brick & Lime Co. started its brick plant for the season about June 1. The plant has been rearranged, and new machinery added, giving a capacity of 40,000 a day. A tile machine will be installed shortly.

The new plant of the Sutherlin, Ore., Brick & Tile Co. started operations about the middle of May, with a daily output of 30,000 brick.

The California Enamel Brick Co. has been incorporated at Los Angeles, with a capital stock of $250,000 by A. F. Andres, C. P. Campbell, R. B. Andres, A. C. Meyers and J. W. Hislop.

W. H. Shepard, formerly of Idaho, is preparing to start a new brick yard at Ontario, Ore.

PHILADELPHIA.

Much Building Planned Calls for Burned Clay Products of All Kinds.

Philadelphia, Pa., June 21.—The building situation looks bright here, and many large business buildings are projected as well as hundreds of dwellings. The paving brick plants are enjoying a lively season, as well as those which make front, face and ornamental brick, etc. The fire brick men look for a better season than last as the iron and steel trade at present looks brighter. The increased use of tile has brought this product to the front as one of the leaders. Almost every house, no matter how inexpensive has some tile work about it. The use of stove linings has decreased on account of the onward march of gas, steam, electricity, furnaces, etc., and that line is not so good. Sewer pipe demand is showing considerable activity. The demand for pottery has kept the potteries busy, china and dinner ware selling readily. Sanitary ware has been good all the year, the same as electric porcelain goods. Fine belleck and bone china ware and novelties have made advances. The use of terra cotta has greatly increased for the ornamentation of buildings and for building fireproof houses. Fireproofing is today taking a front rank among clay products. Drain tile is in pretty fair demand also and that branch of the business looks good, in the East, all through Pennsylvania, New Jersey and New York State.

The advertising that the Building Brick Association of America has been carrying in high class weeklies and monthlies has done a great deal of good in educating the people as to the use of clay products.

J. Y. Cassel, of 915 Arch St., manufacturer of burned clay gas logs, the plant being at Kennett Square, Pa., has been doing business for thirty years and does a large wholesale business. He also makes architectural terra cotta and aquarium supplies of clay. He has two kiln and uses a special clay for making these goods.

J. Perry Lukens, agent here for the American Sewer Pipe Co., has been in this line for sixteen years. He says the situation this year looks good. There is quite a demand for hollow building block, the kind he handles are glazed and smooth, and are not sold as much in the Philadelphia market as the New Jersey block, the freight being much less on the latter.

W. M. Stewart of the Yellow Rock Pottery of this city, has a new line out called the "red-banded ware," made from a clay, which he has been experimenting with, which is much heavier than is ordinarily used. Formerly this ware bore blue and white or plain blue bands. An addition to the plant has been built, which will be used to make Rockingham and jet ware on a red body, similar to the English make of that kind. It is understood that this is the first time an American manufacturer has made these on any other than the yellow body ware and this is also the first American concern to make jet ware of any kind.

The Keystone China Co., of New Brighton, Pa., has been incorporated with a capital of $200,000, by James M. Whittaker and Arthur S. Whetmore of New Castle, Pa., and Joseph F. Bartley of East Liverpool, Ohio. It has purchased the old pottery in Block House Run, below the Porcola Works, equipped it with new machinery and is now operating the plant.

J. E. Whittaker, formerly general manager of the Shenango China Co., of New Castle, Pa., has severed his connection with that company, and has associated himself with the Keystone China Co., of Beaver Falls, Pa., making hotel china ware.

The Clay Worker's Library
BOOKS YOU NEED

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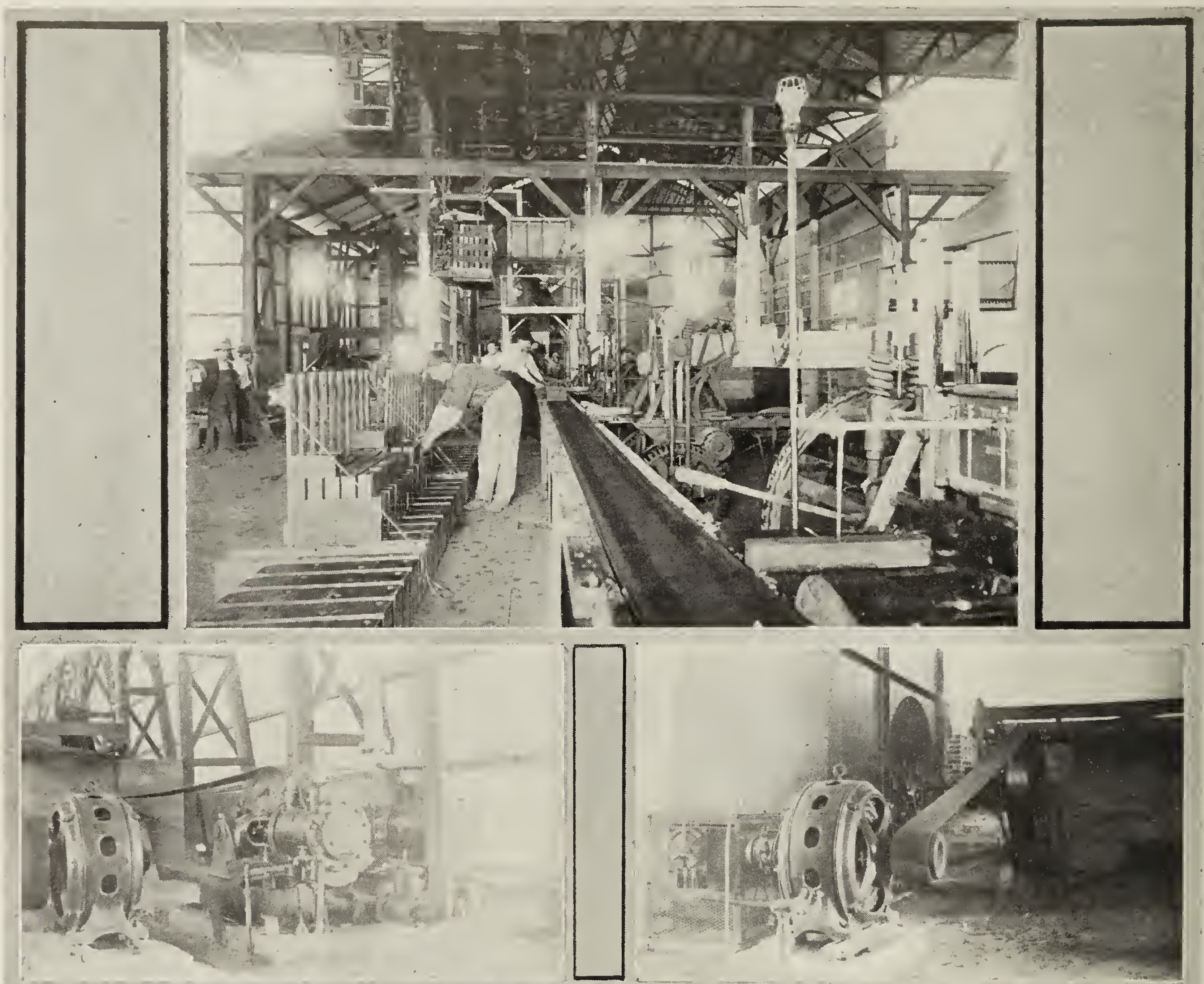
64 Pages, with Illustrations. By Holden M. Ashby

KENFIELD-LEACH CO., 445 Plymouth Court, CHICAGO

ONE OF THE MOST MODERN BRICK PLANTS IN THE WORLD



These views show a portion of one of the most modernly equipped paving brick plants in the world—that of the Oakland Paving Brick Co., of Oakland, Calif. The entire plant is electric-driven. The upper picture shows the actual operation of the automatic represses. In the far background is the brick machine and rotary cutter which are shown more clearly in another picture. In the center, to the left, is a 50 H. P. induction motor driving a 14x10 duplex air compressor. In the center, to the right, is a variable speed induction motor driving a 20-ft. dryer fan. At the bottom, is a closer view of the brick machine and rotary cutter, with the pug mill located above on the platform. The line shaft, to which the 250 H. P. motor is belted, is shown clearly at the right of the photograph.

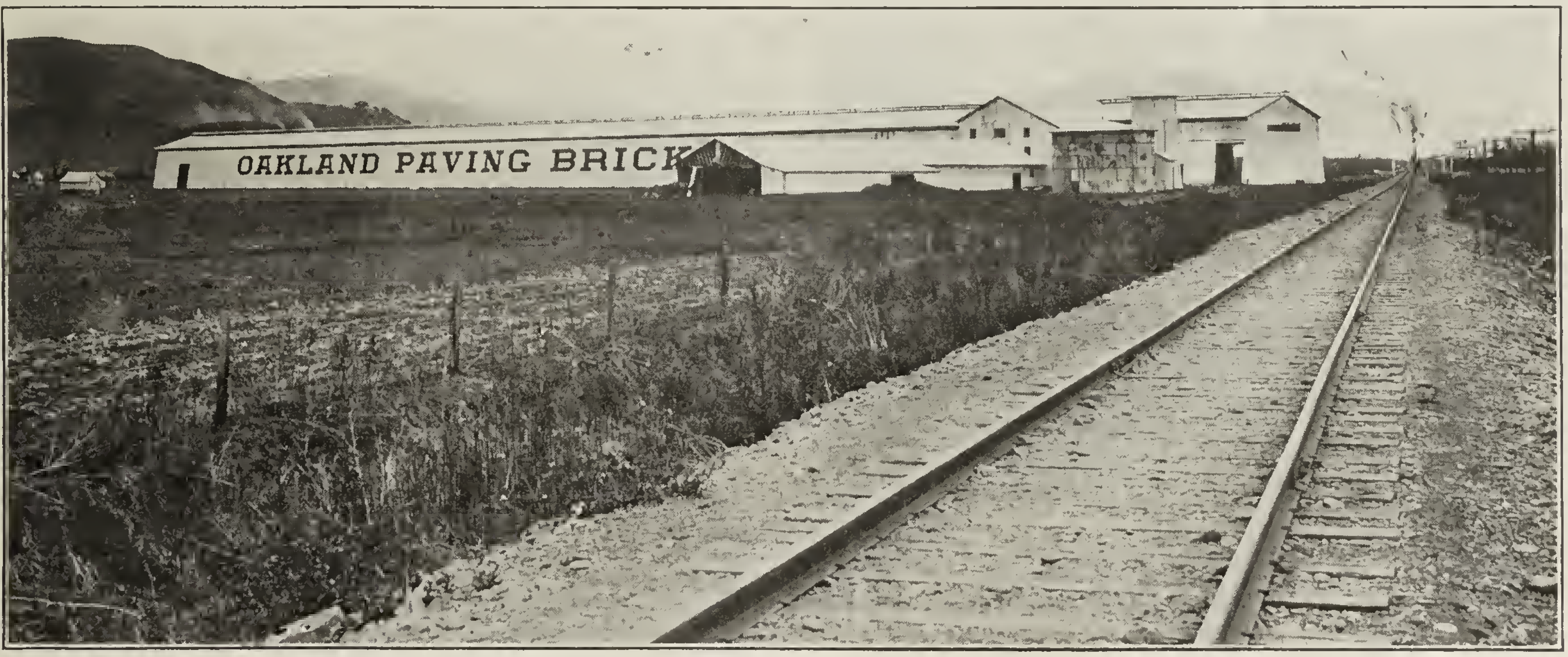
BRICK AND CLAY RECORD
VOL. XLI-No. 2
JULY 15, 1912

AN ELECTRICALLY-DRIVEN COAST PLANT

Necessity for Greater Economy of Operation Causes Introduction of Motors Controlled from Sub Station by Big Paving Plant

By O. T. METZ

The demand for brick is general wherever building operations are carried on and brick plants are, therefore, found widely scattered throughout the United States. As the work is generally of a rough heavy character the methods employed in manufacture have not usually been given the attention and thought which has been given some other lines. Recently, however, much more attention has been given to securing greater economy of operation and this has brought about the introduction of electric drive. In some cases, individual motor drive has been used and in others group drive. Due to the fact that there is an extremely wide variation in the power required to drive certain of the machinery employed, it is rather difficult to select motors which will have sufficient capacity to run the machines under maximum conditions and still operate economically on the usual loads.



General View of the Extensive Works of the Oakland Paving Brick Co., Oakland, Calif.

For this reason, group drive has been employed to a considerable extent in brick plants. With this arrangement, while some of the machines may be operating at maximum capacity, others will be running light, which will produce a more nearly constant load curve with resulting improvement in power factor.

One of the recently constructed electrically-driven plants is that of the Oakland Paving Brick Co. This is said to be the largest paving brick plant in the United States, having a capacity of 100,000 paving brick per day. Its total capacity being 200,000 of all kind of brick per day. The plant is located near Niles in the beautiful and prosperous country near the foot hills of the Coast Range on the east shore of San Francisco Bay. All kinds of red brick are made, but paving brick is the specialty. Plenty of good clay is at hand which is reached by the removal of approximately three feet of the rich top soil.

The main building, which is of mill construction covered with corrugated iron, is extremely large and roomy. It is arranged in the shape of an "L", the longer member of which is practically 1,000 feet in length. A crane runway, supported on timbers independently of the building construction but tied to it, carries a ten-ton, 62-foot traveling crane which serves the entire building. This is operated by 220-volt alternating current motors and was built by the American Clay Machinery Co., which company also furnished all the brickmaking machinery.

The plant is electrically driven throughout, and is also lighted by elctricity. Many other new and interesting features have been introduced in this plant which can only be appreciated by a visit, but it is hoped that the accompanying description and photographs will give some idea of the completeness of the details.

The electrical equipment includes motors, controlling apparatus and transformers. Practically all the motors are 2,200 volt induction motors as these have been found exceedingly satisfactory in all installations of this character. This type of motor has been used very extensively in crushing plants, brick plants, and other plants where there is a large amount of dust, and has given extremely good service. Motors of lower voltage have frequently been used, mainly because they were believed to be somewhat safer for the operatives, but it has been found that where proper care has been taken in the installation, there is no serious danger from this source. A very considerable saving of copper in wiring for the motors is effected and also the cost of step down transformers is saved in many cases.

Power is delivered to the plant by the Pacific Gas & Electric Co. over a 60,000 volt, three-phase transmission line. Immediately outside the sub-station, which is adjacent to the main building, is a heavy frame work which carries the terminal insulators, air brake switches and pole-top fuses. From this frame work, the wires are carried into the sub-station to 60,000-2,300 volt oil-filled water-cooled transformers. Wires carry the current from these to Type "C" and "D" starters for the 2,200 volt motors and to Type "AL" transformers which reduce the voltage to 220 volts before the current enters the potential starters that control the other motors. All motors throughout the plant, with the exception of the crane motors, are controlled from the sub-station. An annunciator in the switch house is connected by a bell wire to a station at each motor. By a system of signals, the machine operator notifies the switch attendant when to start or stop a motor. By means of this arrangement all the starting and switching apparatus is kept in an atmosphere free from dust and under the care of a single skilled electrician. The wires connecting the starters and the motors are carried in metal conduits.

Interior View Showing Crane and Automatic Brick Setting Machine With Repress in Foreground.

The lighting of the plant is effected by means of standards placed beside the machines with an incandescent light at the top. This is protected by a lamp guard. This arrangement leaves all overhead space free for the movement of the cranes. In parts of the building, where the crane does not operate, drop cords or conduit are used.

The clay pits are located close by the plant. The top layer of earth is removed by a horse scraper, the same means being used to excavate the clay which is dumped into a hopper. It is planned to install an electric shovel soon to do this work. From the hopper a belt conveyor carries the clay to a 24" disintegrator, and after being thoroughly crushed it is carried by means of a chain conveyor to a hopper above the pug mill, into which it is fed as needed. It is here ground fine and mixed with a suitable amount of water to give it the proper consistency. From the pug mill, the mixed clay is discharged into the No. 65 brick machine located immediately below. From the die, the brick are delivered to a No. 83 rotary cutter. The brick are then carried by an off-bearing conveyor belt, in front of a row of four automatic represses into which they are fed by hand, if they are paving brick. If common red building brick or sewer brick are being made, they are not re-pressed, but are taken from the conveyor by the off-bearers and hacked in units of 500. All rejected brick are left on the conveyor belt and dropped from the end into a conveyor beneath the floor which returns them to the pug mill. All of the above machinery, together with the connecting conveyors, is driven from a line shaft, which in turn is driven by a 250-h. p. Type "AN" motor shown in one of the accompanying photographs.

One of the greatest labor saving devices in the plant is the automatic brick setting machine, by which the crane picks up the brick in units of 500 and stacks them in a double continuous dryer, each dryer holding 150,000 brick. After the dryers are filled with brick and covered by means of wooden covers on wheels, hot air is blown in through apertures on each side at the bottom. The hot air is blown in by a 240" fan driven by a variable speed motor which enables the amount of air supplied to be regulated at will. Two 84" disc fans driven by 10-h. p. constant speed motors draw the moist air from the dryers.

Crude oil is used throughout the plant for all heating purposes. A duplex 14"x10" Clayton air compressor driven by a 50-h. p. Type "AN" induction motor furnishes all the air needed for various purposes, including that used for atomizing the oil in the burners for the kilns and hot air furnaces. Compressed air is also utilized for blowing the dust from the motors and cleaning the dies and presses.

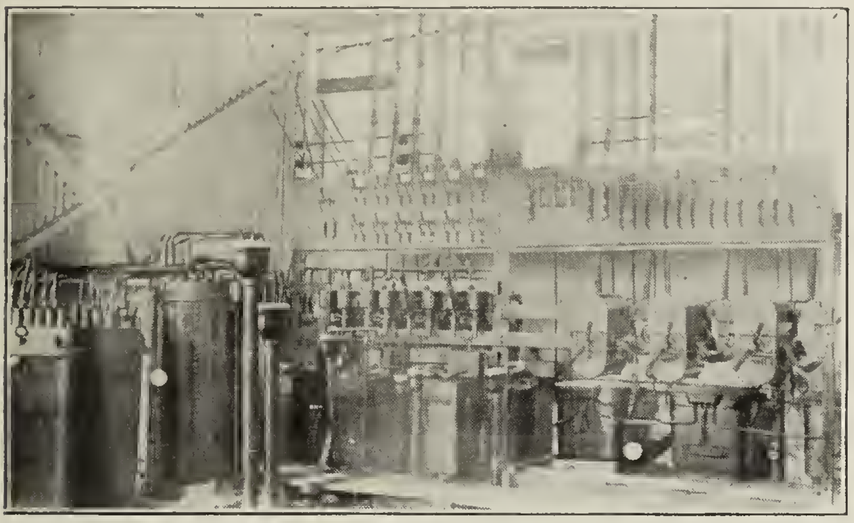
After drying for 24 hours, the brick are removed from the dryer by means of the brick setting machines and are stacked in the kilns, 500 being moved at a time. After being burned, the setting machine is again brought into play and the brick are removed for cooling and finally loaded on cars. It will thus be seen that the minimum amount of labor is employed in handling the brick. The only points at which they have been individually handled are when they are fed into the re-presses, stacked upon the brick setting trays or piled in the cars. This means a very great reduction in the expense of operation.

The brick, broken in the dryers or kilns, are ground up in a 9-foot dry pan driven by a 40-h. p. motor and delivered to the pug mill where they are again worked up into brick. This method of handling, of course, greatly reduces the waste.

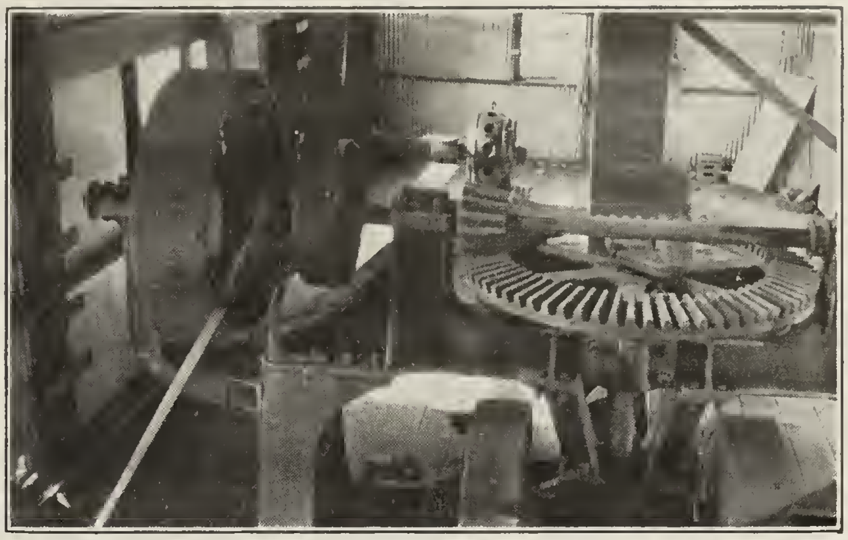
A 6,000 gallon oil tank, located some little distance from the plant, contains sufficient oil to operate for a very considerable period, and makes possible the buying of oil in large quantities enabling the company to buy it at a reduced price. The oil is delivered from the tank by three No. 1 Gould oil pumps, driven by a 10-h. p. motor, which also drives a deep well water pump which supplies all the water needed about the plant.

This plant has now been in operation for about a year and has given complete satisfaction in every detail, and

TWO VIEWS SHOWING THE OAKLAND PLANT EQUIPMENT



Interior of Sub-Station Showing Transforming and Potential Starters for 2,300-Volt Induction Motor.



Forty-H.P. Induction Motor Driving Rollers in 9-Ft. Dry Pan at Oakland Paving Plant.

the owners are highly gratified with the success which has attended their choice of apparatus and their decision to use electric drive throughout. Much credit is due to the officers of the Oakland Paving Brick Company for their hard and earnest work in building so successful a plant. The president of the company is L. G. Burpe, who is also vice-president and manager of the First National Bank of Oakland. The vice-president is E. A. Heron, who is president of the Oakland Con. Trac. Co.; the secretary and treasurer is D. K. Halloway. The general offices of the company are in the First National Bank Building, Oakland, Cal.

NATIONAL COMPANY INCREASES HOLDINGS.

Enlarging Interests Make New Financial Arrangements Necessary—Canadian Company Formed.

By far the most interesting piece of news in Pittsburgh clay and brick circles, during the last fortnight, was the action of the board of directors of the National Fire Proofing Co., proposing to the stockholders the issuance of $2,500,000. This will result in the refinancing of this great corporation, and a special meeting of the stockholders is to be held July 25.

Back in 1906, bonds valued at $2,500,000 were placed upon the properties of the company, all of which were payable at the rate of $250,000 per annum. Since that time, $1,500,000 has been paid on this obligation.

Of the bonds to be issued, it is proposed that $1,000,000 be used for the retirement of the bonds now outstanding, of which $250,000 will be paid in 1913 and thereafter annually until 1916. For improvements to the different properties of this company, there has been spent between 1906 and 1911 no less than $715,505.19, all of which has been charged to the operating expenses.

The local or parent company has joined Canadian interests in the organizing of the National Fire Proofing Co., of Canada, Ltd., and there has been invested in this company $300,000, of which 50 per cent was invested by the American and Canadian companies.

The National, however, has kept on expanding, and since last January has taken over the plants and lands of the Great Eastern Clay Products Co., which operated in New Jersey. This action was looked upon as a wise investment by the board of directors of the National. This was accomplished by the National taking $450,000 bonds secured by a mortgage on all of the properties and franchises of the reorganized company, including clay lands, factories and machinery.

As a further consideration for the advances, the National Fire Proofing Co. acquired two-thirds of the capital stock of the American Clay Products Co., which is capitalized at $1,000,000.

The net earnings of the company since 1906 to 1911 inclusive have been announced as being $2,921,778.55. During the same period the company has also paid out in dividends $1,343,085.

It is generally admitted among clay working concerns that much of the success of the National Company is due to its constant campaign of advertising, wherein is shown the great variety of uses to which the company's product can be put. Under the direction of Sherman Ford, manager of the advertising department, the company has just issued a small booklet on fireproofing service, which is handsomely printed and most generously illustrated. "The Natco House," recently published for the National by "The Brickbuilder" of Boston, also contains a great variety of plans and illustrations of homes built from and with the products of the National. Both of these publications have been very well received by the building profession, and as a result the company is deriving much benefit in the sales department as a result of the progressiveness of its publicity department.

Niagara Furnishes Power for Brickmaking.

A notable feature of the industrial development of Canada is the extraordinary work being accomplished by the Hydro-Electric Power Commission of Toronto, Canada, in supplying electric energy to industrial enterprises throughout the provinces from the vast resources of the Niagara Falls. Among the industries directly supplied with electric power from this source, are the Port Credit Brick Works, Port Credit, Ont., and the Dominion Sewer Pipe Co., Swansea, Ont.

The new plant of the Vogle Clay Products Co., Weir, Kan., will soon begin operations.

ELECTRIC POWER IN NORTH DAKOTA.

Red River Valley Plant Indorses Electric Drive—Accurate Record of Comparative Costs.

Mr. Louis Campbell of the Red River Valley Brick Co. at Grand Forks, N. D., expresses the opinion that the best kind of power for brick plants is electricity, which alternating current power can be obtained at a reasonable cost and which equipment calls for a driving of single units. This company has maintained very careful records of comparative costs between steam and electricity for power purposes and some of these figures are included in the following paper. It is to be noted that, in this case, two machines are operated from one engine and in such cases it appears that a steam plant is a cheaper producer of power, as it will be seen that the cost per thousand for steam power is only 15.2 cents as against 20.6 cents for one of the electric motors and 18.3 cents for the other motor, while the average cost per hour per h. p. is practically the same in all three.

At this plant the engineer is required to make report each day of the number of hours the engine runs also the number of brick made by each machine. Every pound of coal is weighed each day, that is used in the furnace and an independent water heater is on the pipe that runs to the boiler. The oil and waste is all charged to the engineer and the average per day is taken at the end of the season.

The electric motor requires very little attention and the cost for oil and waste is very small.

One of the electric motors is a 35 h. p. used for hauling clay cars up a steep grade while the other motor for driving the brick machine is only 30 h. p. and is not submitted to extra loads.

In a recent communication Mr. Campbell states:

"The writer's personal choice as to the best kind of power for a brick plant is electric where you can get A. C. power for three cents and where you have only single units to operate.

ANNUAL REPORT.

Water for season, 247,636 gals	$39.36
Wood, 2¼ cords	9.00
Coal, 228,645 lbs. at $3.65 per ton	645.92
Engineer, $3.96 per day	312.84
Oil and waste	21.23
	$1,028.35

Machine No. 1 run 719 hours 5 min.

Machine No. 2 run 697 hours 37 min.

Engine run 735 hours 20 min.

Number brick made on two machines, 6,737,040.

There was consumed 5,351 gallons water for washing boiler and 3,000 gallons last day machine run.

Consumption of water for steam, 239,285 gallons.

Average h.p. used, 67.

Average cost per hour for power, $1.39 8/10.

Average cost per M. for power, $0.15 2/10.

Coal per h.p. per hour, 4 7/10 lbs.

Water per lb. of coal, 1 2/100 gals.

Cost per hour per h.p., $0.02 8/10.

Average brick per day of 10 hours for 2 machines, 91,660, or 45,830 for each machine.

The following are the figures for 1909:

Average cost per hour for power, $1.303.

Average cost per M. for power, $0.138.

Coal per h.p. per hour, 6 lbs.

Water per lb. of coal, 96/100 gal.

Cost per hour per h.p., $0.026.

Average brick per day of 10 hours for 2 machines, 94,000, or 47,000 for each machine.

ELECTRIC POWER FOR NO. 3

Average h.p. used, 33.

No. hours motor run, 741 at 3c per k.w	$676.76
Cost of oil, 75c; cost of waste, 25c	1.00
Total cost for motor	$677.76
No. brick made, 3,288,088.	
Average cost per hour	$0.91 4/10
Cost per hour per h.p	.02 77/100
Average cost per M. for power	.20 6/10

ELECTRIC POWER FOR EAST SIDE.

Average h.p., 30.

No. hours motor run, 815.

No. brick made, 3,722,400.

Cost at 3c per k.w	$670.79
Oil and waste	.80
Total cost	$671.59
Average cost per hour	$0.82 4/10
Cost per hour for h.p	.02 74/100
Average cost per M. for power	.18 3/10

"In our case with our steam plant, where we operate two machines from the one engine, the steam plant is the cheaper of the two, as you will note by the report that the cost per M. for steam power is only 15.2 cents against 20.6 cents for one of the electric motors and 18.3 cents for the other, while the average cost per hour per h. p. is practically the same in all three.

"Our engineer is required to make a report each day of the number of hours each machine runs and the number of hours the engine runs; also the number of brick made by each machine.

"We use very little wood as you will notice by the report that there was only 2¼ cords used during the season.

"The oil and waste is all charged to the engineer and the average per day is taken at the end of the season. We pay our engineer so much a month and board.

"The electric motor requires very little attention as the cost for oil and waste is very small. One of our electric motors is a 35 h. p., using an average of 33 h. p. as it was required to haul our clay cars up a steep grade while the other motor is only a 30 h. p. A. C. and has no additional hauling outside of the brick."

PAVING BRICK PUBLICITY BUREAU.

Realizing the importance of concerted activity in demonstrating the many advantages of paving brick for street material, there was recently organized in Chicago what will be known as the Paving Brick Publicity Bureau. The sole object of the association, which is composed of paving brick concerns which have a representative in Chicago is to advocate and urge the adoption of brick for street paving in Chicago and its suburbs.

In the past, the publicity bureau of the cresoted block manufacturers has been very active in Chicago and the results are that a large number of Chicago's downtown streets are paved with wood block paving. After using these block, which have caused untold losses to team owners on account of slipping and falling, Chicago will not be slow to see the superior qualities of brick paving. A reaction is looked for from the work of the new organization. It is under the supervision of Mr. W. M. Hansen, with offices at 1249 Otis building. Mr. Hansen is an experienced promotor and without doubt can prove to the authorities that there is far more virtue in paving brick than in all other street surfacing materials. As a result of the good work already done, a large contract on Montrose avenue was turned from cresoted block in favor of brick. This is the beginning of a long and active campaign that will bring vitrified paving brick into more prominence in Chicago than has ever been the case in the past. This work, like the clay show, should have been undertaken long ago. However, there will be no idle time spent and the work of the bureau cannot but result in manifold good.

It would appear that there is in this idea a suggestion that might be taken up and acted upon by other cities with the most pleasing results. The authorities must be shown that there is more virtue in the brick street, when properly laid with good materials, than any other form of pavement.

Harmony in the office, in the plant, on the yard and in the pit adds to the general efficiency of the entire working force, all of which tends to swell the profits. Friction means loss of power and energy both of machinery and men.

Born July 31, 1876

Albert T. Leach

Died July 4, 1912

ALBERT T. LEACH, secretary and treasurer of The Kenfield-Leach Co., publishers of "Brick and Clay Record," was killed in an automobile accident near Valparaiso, Ind., July 4. John J. Moroney, president of the Chicago Brick Machinery Co., who was with Mr. Leach, received a severe wrench to his back and neck and was confined several days in a Chicago hospital. Mr. Leach's chauffeur was the most seriously hurt, the others in the car escaping with bruises.

Mr. Leach was taking a party of friends to Michigan City, Ind., in his car. In an effort to avoid a motorcyclist, who had lost control of his machine, the chauffeur attempted to make a sudden turn. The car was hurled into a ditch and upset. Mr. Leach was pinioned beneath, both of his legs being broken and his body crushed. He died instantly. Mr. Moroney was rendered unconscious, but was revived shortly after.

Mr. Leach was one of the best known men in the brick and clay product industry, and the hundreds of telegrams and letters expressing sympathy, from all over the country, received by his widow and business associates, attest to the high esteem in which he was held.

While the publication of "Brick and Clay Record" was only one part of the vast interests of the Kenfield-Leach Co., he was interested vitally in the promotion of anything that tended to bring clay products into popular favor. In keeping with this spirit he was a moving factor in the organization of the Clay Products Exposition Co. and the success of the first show, held last March in the Coliseum at Chicago, may be attributed to a large extent to his executive ability. He was vice-president of the exposition and went into the project fearlessly, regardless of the seemingly insurmountable obstacles that greeted the promoters. He not only gave freely of his time, but of his money.

As a publisher, Mr. Leach's constant aim was to make "Brick and Clay Record" the standard of excellence in trade publication, and the magazine is so recognized today.

The Kenfield-Leach interests are greater, however, than this one publication. From the two small presses Mr. Leach found when he began his career with the concern in 1899, there has grown a publication business that covers seven floors of a building erected for the exclusive use of the varied interests. As an evidence of the magnitude of the business since his connection with the firm it may be stated that nearly one hundred trade publications are printed regularly from the plant.

Mr. Leach was born July 31, 1876, in Green county, Missouri. He began his business career as a printer's apprentice. It was not long before he gave indication of his exceptional ability and soon was conducting a printing establishment of his own.

In 1899, Mr. Leach began with the firm that was later destined to bear his name. This was the Windsor-Kenfield Publishing Co. He was given charge of the printing department—at that time a comparatively small business. Under his guidance the printing end grew until today it is one of the largest plants of its kind.

Three years after Mr. Leach joined his fortunes with those of the Windsor-Kenfield Publishing Co. he was made manager of the concern, and later secretary and treasurer, his name being included in the firm name.

Coming as he did from a small country town, barely fourteen years ago, Mr. Leach's rise in the business world was phenomenal. But he was a climber and did things in a big way. He was a tireless worker, a born executive, and his untimely death cut short a career that was destined to bring him greater distinction in the field he had chosen.

Mr. Leach was possessed of a magnetic personality, was of a lovable disposition and drew to himself many warm friends. He had the happy faculty of placing much confidence in his fellow men. This was especially noticeable in his relations with his employes, and it is a remarkable fact that this confidence seldom was misplaced. His sympathies were with the ambitious struggler and from his own experience he believed they would make good, told them so, and, as a rule, they did.

Mr. Leach married Miss Clara Harris, of Harris, Mo., Nov. 24, 1904. The widow and his two brothers are the only immediate members of the family who survive.

GREAT HYDRO-ELECTRIC POWER STATION

Big Dam Causes Overflow of Low Lands, Making Extensive Drainage Necessary—Offers Opportunity for Electric Power in Plants

The latest word in water-power development is the great dam and hydro-electric power station, now in course of construction on the Mississippi river at Keokuk, Iowa.

This gigantic work, the largest ever undertaken in the history of the use of water power was fully described by Hugh L. Cooper, Chief Engineer of the Mississippi River Power Co., which has the work in charge, in an address delivered before the annual meeting of the Iowa State Drainage Association, at Burlington, Ia., May 1-2.

Mr. Cooper spoke in a popular and non-technical vein and gave an interesting history of the development of the water wheel from the dark ages to the present year, illustrated with a stereopticon. There were also some interesting views of special features of other water-power achievements, especially at Niagara Falls and McCall's Ferry, Pennsylvania, both built by the speaker.

The illustrations shown herewith give some slight conception of the work being done in the Mississippi in the corner of Iowa and of the nature of the address of its chief engineer.

There was more connection between the drain tile association and the greatest water-power development in the world than appeared from the pictures and the address of Mr. Cooper, however. The company building the great works will raise the level of the water in the river for sixty-five miles and give deep navigation for that distance; the quantity of land overflowed is comparatively small, considering the magnitude of the water-power installation, and the company from the beginning has been much interested in the conservation of the low lands.

The bluffs are close to the river bank for some miles up the river above the dam and the strip of land to be overflowed on each side of the river is narrow. At a point, locally known as Green Bay, however, the bluffs recede and a considerable area was subject to overflow, even in the past. About 20,000 acres are now overflowed at high stages of the Mississippi, and about 8,000 acres of this, next the river, would normally be permanently drowned by the final installation of the water-power company. Instead of preparing to permanently destroy this rich land, which would be valuable except for the frequent floods, the company at once proposed that the whole 20,000 acres be drained. It offered to pay half the expense of a drainage district to be formed with adequate pumping stations, after the latest practice and best methods to include the whole 20,000 acres. It became the owner of some land there in the course of business and started into operation the machinery of the Iowa drainage law for that purpose. The district lies in both Lee and Des Moines counties which makes a bi-county commission necessary, and the progress has been rather slow, but a complete survey has been made and the next step is the report of the engineer employed by the commissioners. Some of the land owners are opposing the drainage plan, preferring to sell their lands to the company to be forever submerged, but it is believed that the drainage plan will go on to completion.

Construction Work of Hydro Electric Power Station, Keokuk, Ia.

General View of Lock in Course of Construction.

The water-power company has given hearty moral support to a considerable territory in Illinois which is being drained, and in every way has shown a very friendly attitude toward all efforts to conserve the lowlands and increase the value of all real estate near the site of its great works.

Connected with its overflow necessities, the company has settled amicably with over eight hundred different farmers for damages from prospective overflow, and only a bare half dozen have hired lawyers to attempt to collect more than the company is willing to pay in each case. Incidentally, the water-power company of which Mr. Cooper is the vice-president on the ground is beginning the expenditure of over $75,000 for model hard roads in both Iowa and Illinois near its plant at Keokuk, having a length of nearly thirty miles in all. It is possible that clay manufacturers in the surrounding country will avail themselves of the opportunity afforded for securing electric power to operate their plants. If so, it would mean the re-equipment of their works with electric motors.

San Francisco's First Brick Pavement.

The Denny-Renton Clay & Coal Co., Hoge Bldg., Seattle, Wash., has obtained a contract from the city of San Francisco to furnish brick for the first brick pavement for that city, it being one of the few cities in the United States which has never used vitrified paving brick on its streets. If the paving proves satisfactory, it is believed a big market will be opened in Frisco for paving brick.

SHALE TILE PLANT USES ELECTRICITY

Coal City, Ill., Clay Product Industry Installs Electric Power from Central Station and Finds Service Economical and Satisfactory

Although the coal deposits in and about Coal City, Ill., are rapidly becoming exhausted, a new industry has, in the past year, been established there, which is a valuable acquisition to the town. This, the plant of the Illinois Shale Tile Co., whose offices are at Aurora, Ill., is a thoroughly modern and up-to-date institution. Electrically driven, the machinery includes all that is latest and best in labor and expense saving devices.

The plant is located on the Elgin, Joliet & Eastern R. R., with a switching arrangement to the Chicago & Alton and the Santa Fe Railroads. The factory grounds consist of about 60 acres of land. The main building is 55 feet wide and 210 feet long with a 12-track car dryer on the first floor and two slatted floors above, for the drying of large tile. Attached to the main building is the machine room 40 by 60 feet, a portion of which is three stories high and part four stories. At the north end of the main building is the fan room 20 by 30 feet in which is located an exhaust fan. The induction fan house is a separate brick building, 30 by 40 feet. The buildings are all fireproof and are built of brick with iron columns supporting the second floor, all built according to the plans drawn by the Rodgers Engineering Co. of Chicago.

Panorama View of Electrically Driven Plant of the Illinois Shale Tile Co.

There are several varieties of clays and shales used at this plant, including a blue shale, fire clay, and surface clay, the shale and fire clay being obtained from a coal mine close by. The clay is hauled to the plant in two-yard side-dump cars. The shale rock is first crushed to two-inch size by a jaw crusher and is then fed into a Frost 9-foot dry pan by a belt conveyor. From the dry pan the ground shale is elevated into a large bin holding 120 tons, the bottom of which is 18 feet from the ground and directly over the pug mill. The clay is fed from the bins to a Brewer 12-foot pug mill and then into a No. 10 stiff mud Brewer brick and tile machine. The brick and tile are hacked on dryer cars furnished by the Industrial Car Co., which are run into a 12-track waste heat dryer, provided by the Rodgers Engineering Co. Sufficient track room has been provided at both ends of the dryer so that seven cars of green tile or brick can be placed ready to go into the dryer at the cool end, while there is room for eight cars of dry goods to stand at the hot end of the dryer. The dryers are thoroughly fireproof, being constructed of brick and steel.

The drying is quickly done. Small drain tile can be placed in the dryer in the morning and taken out in the afternoon for setting. Twenty-four hours time is allowed for the drying of shale brick.

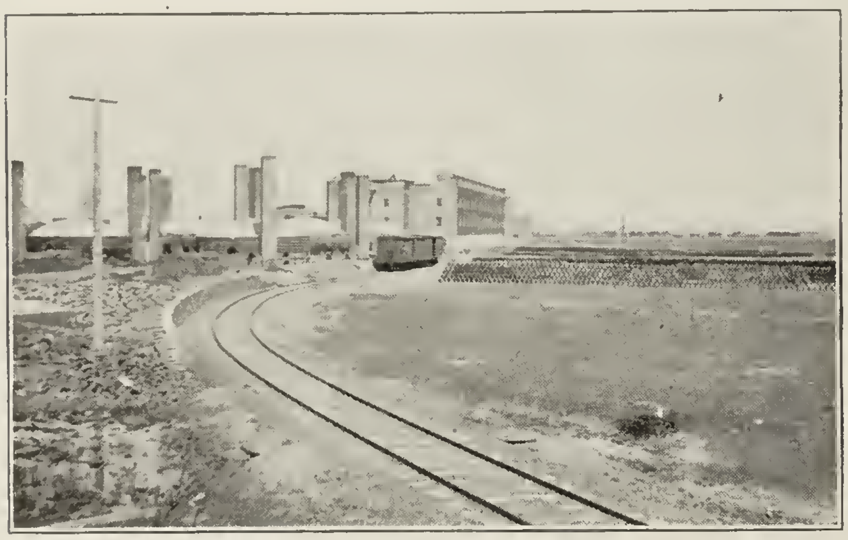
At the present time there are eight 30-foot down-draft kilns in use, these kilns having been built by Claude Smith. Some of the kilns are supplied with 12 furnaces and others have only ten. Coal is used for both water-smoking and burning of the kilns. There are no boilers or engines used at this plant, the fans and machines being operated by electric motors, furnished by the Allis-Chalmers Co. Attached to each of the fans is a 35-horsepower motor, although the total load used is only about 23 horsepower. A 40-h. p. motor is belted direct to the brick machine and the same size to the pug mill. A 50-horsepower motor drives the dry pan, bucket elevator, belt conveyor and jaw crusher.

Electric power is purchased from the Public Service Co. at Joliet, the cost of which has proved to be very satisfactory and much less expensive than if produced with a steam plant. It has been found that the electric current has many advantages over any other kind of power, inasmuch as it is always ready on the wire for use and with proper installation of machinery and motors the friction load is practically done away with. There is also the advantage of saving in repairs on the various machines, inasmuch as the motors will stop running under too severe an overload, whereas with steam power the machine is operated until serious damage is done, in fact, the motors have proved to be virtually safety valves. There is also the advantage of not having the large amount of money invested, necessary to provide boilers, engines, pumps and extra buildings.

On the second floor of the machine room a vertical tile machine No. 79 made by Brewer & Co. has been placed, on which the large sizes of drain tile are successfully made.

The building of this plant was commenced on January 10, 1911, and the plant was put into operation the following July 1st. Drain tile of all sizes up to 24 inch, brick and hollow tile are being made at this plant. When

SHIPPING AND HAULING FACILITIES OF A MODERN PLANT



Cars Loaded for Shipment.

Rear View Showing Track from Pit to Plant.

the plant is in full operation it will employ from 40 to 50 men.

The officers of the company are D. C. Haeger of Aurora, Ill., and E. H. Haeger at Dundee, Ill.

Mr. D. C. Haeger, president of the company, is an exceedingly busy man, and divides his time among the three plants, owned by the D. H. Haeger Estate, the other two being located at Dundee and Gilberts, Ill., within a few miles of Elgin. Mr. Haeger is carrying on some interesting experiments with the clays at Coal City and the results are proving entirely satisfactory, a beautiful face brick in a rose color being one of the latest achievements. This brick is on the oriental order and bids fair to become a "popular seller."

A Corner of the Dry Tunnel.

ORGANIZATION IN THE BRICK PLANT.*

Definite System Necessary—Departmental and Piecework Plan Successfully Used.

By J. S. McCannell.

Organization applies to a brick plant as well as to any other business. Every large manufacturing concern has been built up by men who recognized the value of system in their work. No person can hope to succeed in business unless he has some definite plan or system by which he can determine at stated times where he stands. The brick business is no exception and unless one has some means of telling whether there are leaks or not, it may not be long before there is a balance on the wrong side of the ledger.

We recently read of a case where a business was going behind. The men were all hard working and successful in other lines of life. An outsider was called in who looked over the ground. After a careful investigation, his conclusion was that the responsibilities of the place were resting on too few shoulders. One or two men were carrying the whole load. The younger men in the place were called in. Responsibilities were divided up. The huge departments were divided into smaller units with the result that the place took on new life, and what looked like a black proposition became a live business, with lots of young life and ambition being developed.

The unit system may be applied to the brick business with good results. Divide the plant up into departments. Put a good man at the head of each unit and hold him responsible. In this way if anything goes wrong the responsibility can easily be fixed. The head of the department will take more interest in seeing that things are going smoothly, and if the right class, will develop into a more useful man. All the departments must work together and be responsible to the head superintendent. In this way an account may be kept of the cost of production in each department. No concern can afford to guess what its goods cost. Many a good business has gone to the wall through lack of knowing what it cost to produce the goods.

Men are frequently put at a class of work for which they are not fitted, with the result that they do not make good. In many cases if the head of the department would see just where a man fails and move him around, the man would likely fit in some other place.

The great object is to keep the factory going steady up to its normal capacity. Different schemes may be tried but no one plan will apply to all plants or those making different products. Day work may be necessary and all right for some plants. In most cases, if day work is adopted the workman does not particularly care if things go right or wrong. When he is on piece work his attitude is changed. It is now his business to see that there are no stops or delays. If any men loaf in the gang, the men will call attention to it, and will insist that they do their share or get out. What was nobody's business is now of interest to all. To get desired results the amount earned by the men must be fair. Good men must be kept in the plant, and any system that will keep men satisfied and contented is the one that should be adopted.

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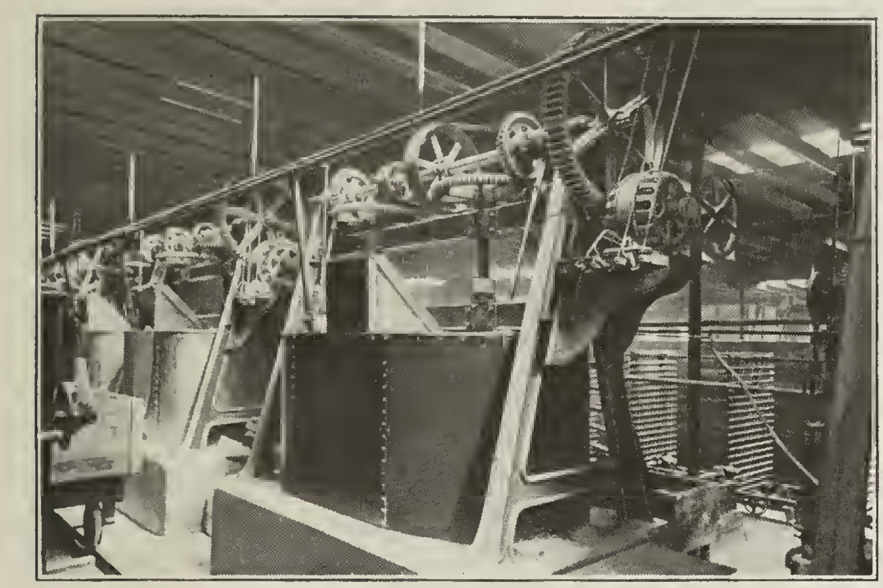
*Paper read before the convention of the Canadian Clay Products Manufacturers' Association, Feb. 14-15, 1912.

HOW ELECTRICITY AIDS CLAY WORKER

Increases Output, Decreases Maintenance Cost, Means Higher Efficiency, Reduction in Power Costs and Economical Arrangement of Plant

Contrasted with present day processes of clay manufacture, which require accuracy, rapidity, continuity and a well designed system for each department of the work as well as for the process as a whole, the old methods of manufacturing brick, tile and other clay products were of very limited capacity, simple design, and operated in a crude way, in many brick plants by horsepower. All the material was handled by hand labor and the output of the various plants was comparatively small.



Double Blunger Electrically Driven at J. D. Owens' Pottery, Zanesville, O.

The developments which have furthered the advancement, include principally the improvements in the various machines, which prepare the clay, improvements in the method of handling the raw material in its various stages, and improvements in the drying and burning processes.

The brick and the tile industries are quite similar to the steel industry regarding the stage of development, for the future of each depends largely on the economies and refinement of their respective arts.

The many advantages and the great resourcefulness of electricity have been important factors in solving these problems and afford

1. More economical arrangement of plant.
2. Increased output.
3. Decreased maintenance cost.
4. High efficiency of plant operation.
5. Reduction in power costs.

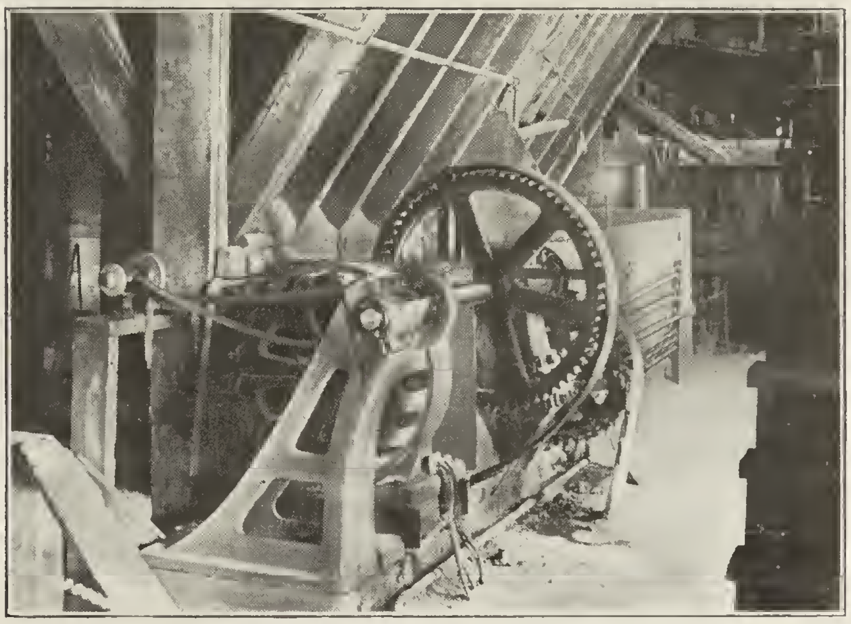
In contemplating the layout of a brick plant the first point for consideration is the location. Railroad facilities, water, coal and location of the raw material are important factors. The use of electric power, especially when supplied by central stations, simplifies the problem as the water and coal questions become of secondary importance. The various departments of the plant can be located and arranged to the best advantage for operating without the limitation of arrangements imposed by central engine drive with belt connections between the various departments.

When the various machines or departments are operated by individual motors there is greater assurance of continued operation as compared with a central engine drive in which case engine trouble means a shut down of the entire plant. Motors maintain practically a constant speed throughout their operating range which results in an increased production as compared with a plant driven by a single steam engine where the speed varies not only with the boiler pressure but also with the variation in load.

The most practical method of drive for auxiliary apparatus such as brick setting machines, haulage locomotives and other traveling machinery is by means of electric motors. These machines greatly facilitate the making of brick and tile and provide economical methods for increasing the output of existing plants, and are of even more importance in large plants where the question of handling the produce is a serious problem.

Electric motors are of simple construction and even for the most severe classes of service are very durable. Due to the fact that they can be applied at the closest position relative to driven machine, the connecting apparatus such as belts, gears, etc., are reduced to a minimum. As the driving units are of a comparatively small size it is an easy matter to make slight changes from time to time to compensate for wear of bearings, etc., thereby preventing undue wear of parts due to poor conditions of machinery. Fuses or circuit-breakers are installed in the motor circuits as a protection against severe overloads such as caused by clogging of the various machines which might cause damage to the motor and the driven apparatus. The possibility of shut downs due to machine breakage is thereby greatly reduced.

By connecting the motors at the nearest available point, line shaft and other belt friction is reduced to a minimum. The various motors operate at good efficiency as they are each working practically at their rated load. In the case of central engine drive, a shut down of part of the machinery means a reduced engine load—with a reduction in operating efficiency due to this cause.



Pug Mill Driven by Westinghouse 40-H.P. Motor, 850 R.P.M.

Engineer's salary	$ 65.00
Coal and gas	180.00
Up-keep of belts	25.00
Loss due to shut-downs from throwing on belts	25.00
Oil and waste	20.00
Gas engineer	6.25
Gas engine maintenance and repairs	25.00
5 per cent loss in time due to gas engine shut-downs	60.00
Incidentals	8.25
	$414.50

In reference to item No. 4 note that on the dust mills they had considerable trouble with belts breaking and also jumping off due to the high speed and the necessity of using such large pulleys on the line shaft and small ones on the mills. Every time a belt was thrown off it was necessary to slow down the engine to replace it, thus delaying the work in the entire plant. This occurred several times a week.

In reference to item No. 6, one of the machinists took care of the gas engine and devoted but part of his time to it.

The demand for power became greater than their capacity so they finally disposed of the above equipment and installed motors, buying their power from the Ohio Electric Railway Co., of Zanesville, Ohio.

The following results were obtained:

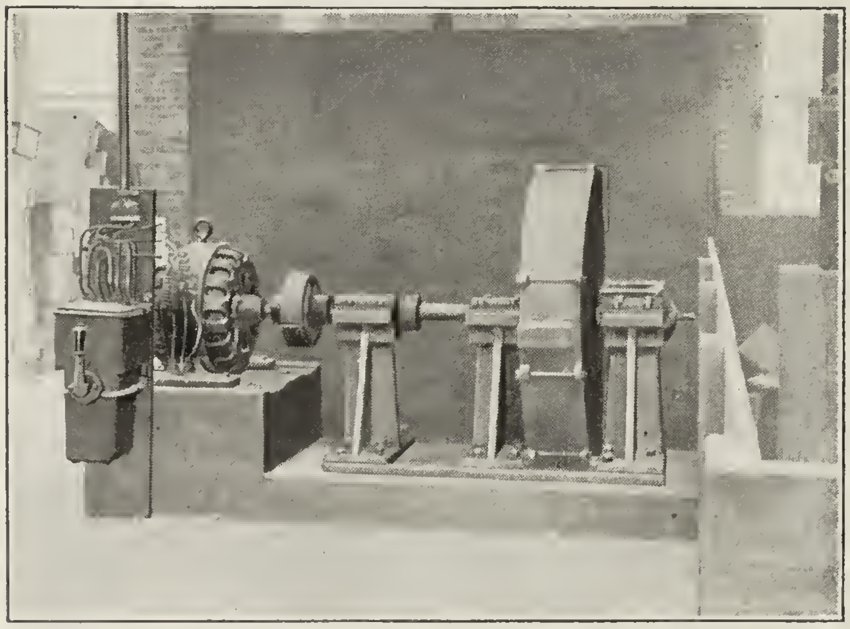
The cost for power including repairs does not exceed $150.00 per month.

On the blunger mills an increased capacity of 15 per cent. Formerly when the charge weighing approximately 4,000 lbs. was placed, considerable belt slippage took place. This has now been overcome.

One of the greatest advantages obtained was on the slip pumps, which start pumping into the empty press against very little pressure and as the press gradually fills the pressure increases until by the time it reaches its capacity the pump will be working against a pressure of from 100 to 110 lbs. With belt drive the slippage increased very rapidly with the pressure and with this method of drive the time required to pump a one-ton charge was 45 to 50 mins. With the motor geared to the pump this work is now done in 15 minutes.

The slip handled in potteries is heavier and takes longer to pump but the per cent of saving in time will be just as great.

A decided advantage was gained upon the dust mills. Formerly their capacity was 4 tons per hour, now they secure 5 tons per hour, and, owing to the uniform speed, a finer quality of dust is secured than was possible heretofore. With the above they increased the capacity throughout their entire plant fully 20 per cent over their old method.

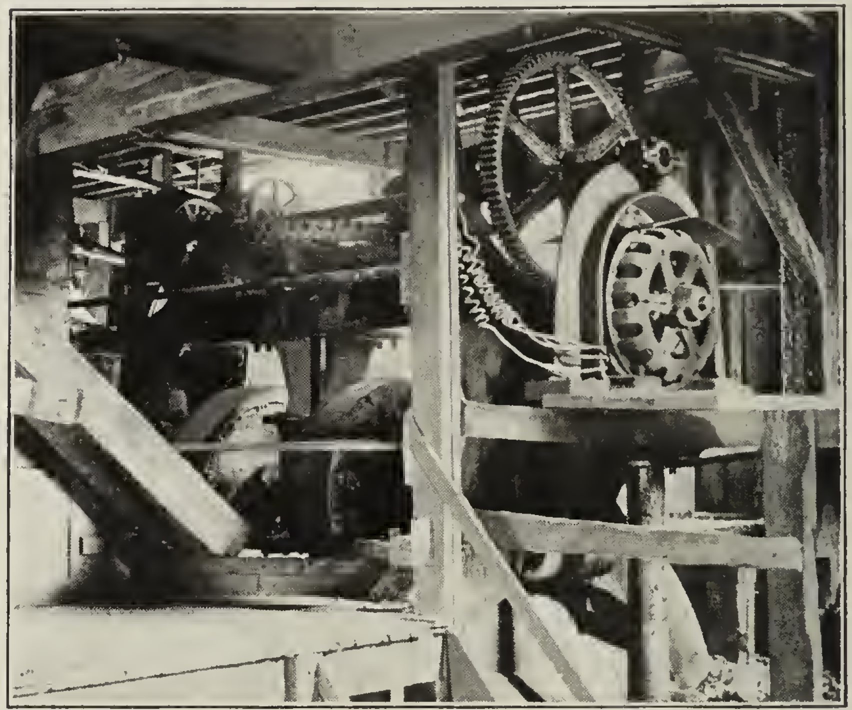


Dust Mill Equipped with Westinghouse Motor at G. B. Owen Pottery, Zanesville, Ohio.

With belt drive considerable trouble is experienced in this class of work due to the dust accumulating on the belts and forming a glazed surface, which causes considerable slippage and also shortens the life.

In the above plant the belts were eliminated entirely in the preparation room. They now have 35 motors installed and have but six driving belts left throughout the entire factory.

One serious difficulty confronting this company at the time of the proposed change, was the heating of the dry rooms. Formerly the exhaust steam from the engine was used, now they are utilizing the waste heat from the kilns. When a kiln is drawn, that is, after the material is burned, the fire is shut off and the kiln allowed to cool slowly. This heat is now drawn off by a fan and blown through the dry rooms, and, as there are always several kilns being drawn at one time, they have more than enough heat. However, they left their old boiler standing in case of emergency.



Dry Pan Driven by 40-H.P. Motor at Plant of the Keystone Clay Product Co., Greensburg, Pa.

By using individual motor drive and purchased power the Mosaic Tile Co. not only increased their production but are now saving $265.00 per month over their former cost.

The various applications of motors in clay manufacturing plants is shown as follows:

Brick Plants—Electric haulage from quarry to crusher, crushers, dry pans, conveyor to screen, pug mills, conveyors to auger, auger machines, cutter, conveyor to repress, repress, conveyor from repress to cars, blower, fans, setting machines and other traveling machines, pumps and other auxiliary apparatus.

Pottery and Tile Plants—Clay washers, blunger mills, sifters, agitators, slip pumps, crushers, dust mills, pug mills, jollies, grog pans, dry pans, chaser mills, wad mills, glaze mills, color mills, glaze pumps, water pumps, conveyors and elevators.

"PARRY OF GARY."

W. H. Pyffe Parry, broker in brick and building material at Gary, Ind., has made himself well known in that city by his novel methods of advertising. He heads his advertising with the following: "PARRY OF GARY" (the man without a million dollars).

That Mr. Parry is enterprising is shown by the fact that he is sending a year's subscription to "Brick and Clay Record" to five leading architects of Gary. Gary is fast coming to the front and since the recent fire, the burned sections are being largely rebuilt with brick.

Concrete Building Collapses.

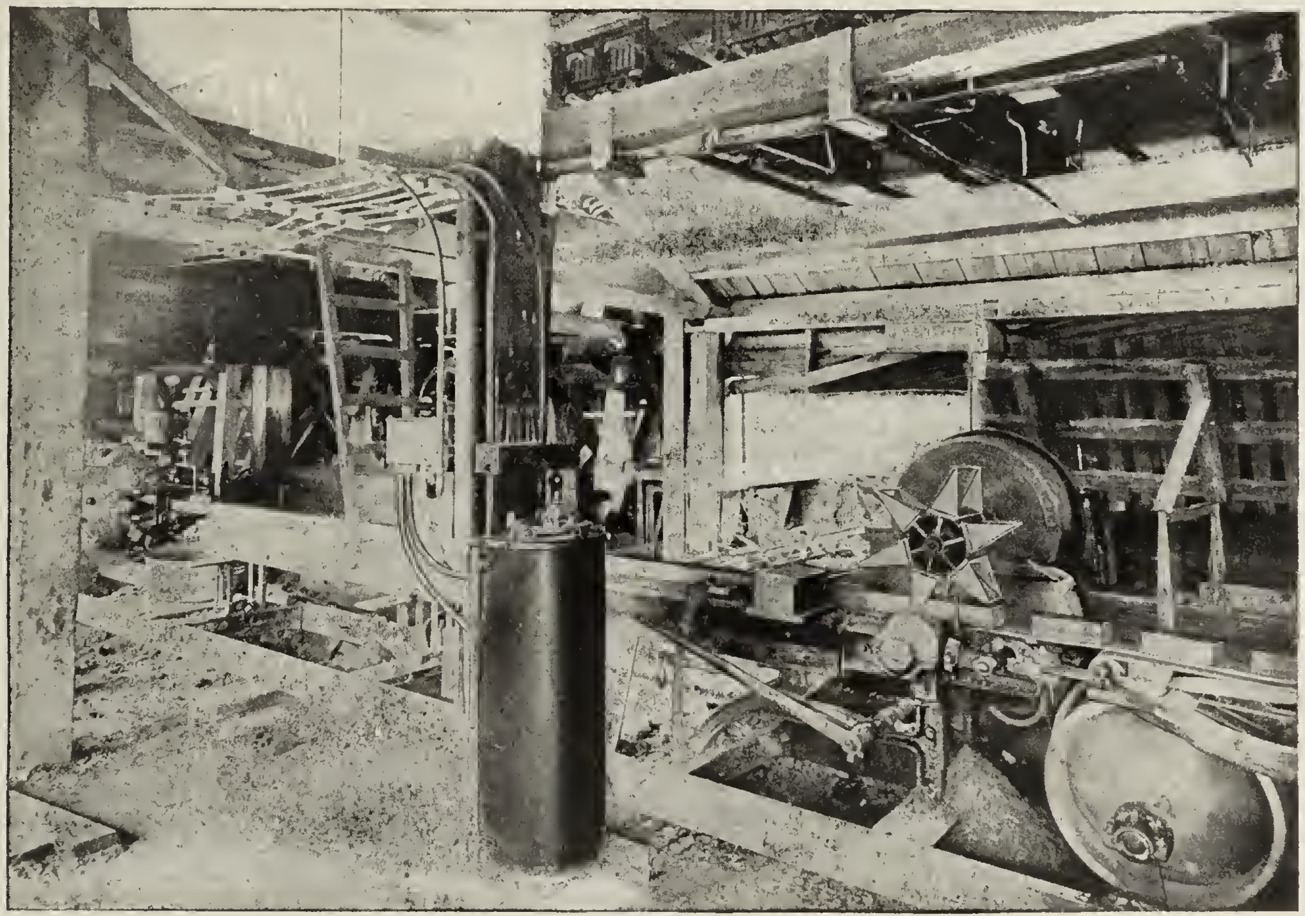
One man was seriously hurt and a number of others injured when part of a concrete building planned for the use of a five-cent theatre at 108 E. 35th St., Chicago, collapsed, recently. Firemen were summoned to extricate some of the victims from the debris.

The Brick Builders Bureau, a new Pacific Coast organization, is already producing excellent results.

ELECTRICITY AS USED IN BRICK PLANTS

Electric Drive Means Not Only Economy But Increased Capacity, Minimized Space and Decreased Danger to Employes

The art of brickmaking is among the oldest of established industries, its beginnings reaching far back of the earliest dawn of civilization, but it is only within the past twenty years, that the introduction of power-driven clayworking machinery has revolutionized the art of brickmaking and given in its proper rank among the greatest of the world's industries. The present annual production is unknown, but a conservative estimate places the aggregate output of the 100 and more varieties of brick manufactured in the United States alone, at more than twenty thousand millions per year. This tremendous result has been reached largely through the aid of the electric motor.



Motor Driven Auger Machine at Bibb Brick Plant, Macon, Ga.

In the entire range of manufactured products there is scarcely an application requiring mechanical power for which the electric motor, in some one of its multiplicity of forms, has not been successfully and economically applied, and the power requirements in the manufacture of brick afford no exception to this general rule. The unequaled convenience, reliability and high economy of motor drive have been repeatedly demonstrated under the most severe conditions of service. The motors are small, compact, of strong mechanical design and high operating efficiency over a wide range of loads. The large number of speeds available makes it easily possible to drive most machines by means of direct shaft or gear connections, thus eliminating power consuming belts and countershafts and minimizing both the space required and danger to employes.

In general, alternating current induction motors fully meet the requirements of clayworking machinery. They are of simple construction, with large overload capacity and have no wearing parts except the bearings or slip rings which, in every case, are of ample design. The particular form of induction motor to be used will depend upon the capacity of the distributing system and service characteristics, including such considerations as frequency of starting, starting torque, continuous or intermittent operation, reversal, etc.

For dry pans, sanders, conveyors, fans, bucket elevators and other machines with similar requirements the standard Form K motor with short-circuited bar-wound rotor is usually entirely satisfactory. Each of these applications involves continuous duty at constant speed together with relatively easy starting conditions and no occasion for reversal of direction of rotation. On the other hand, for pug mills, augers, tempering wheels, excavating shovels, etc., where frequent starting and reversal, variable speed requirements and excessive starting torque are encountered, the Form M motor, with phase wound rotor and external secondary resistance, is in general recommended.

This form of motor with variable secondary resistance is designed to secure maximum torque with the least possible shock to the system when starting under load. Although standard Form K motors will develop a guaranteed maximum torque when running, of twice normal full load torque, they should not be required to start under full load on account of the excessive current taken from the system under such conditions.

When, for any reason, direct current apparatus must be used, motors with compound windings should always be employed except for driving fans, for which service shunt motors are suitable. Where the service requirements are similar to those outlined above for Form K induction motors, the direct current motor should have the standard amount of series winding; where Form M motors would be suitable for alternating current service, the direct current motor should have approximately 40 per cent of series winding and commutator and bearings should be properly protected from grit and flying mud.

With motor drive any individual machine or group of machines can be operated independently of the rest of the plant. "Overtime" in any section entails power charges proportionate only to the machines in actual service. Often, especially in brick plants, the points of application of power are widely separated necessitating makeshift methods or the installation of wasteful and inefficient non-condensing steam engines. Excavating shovels and drainage pumps at the clay pits, ventilating fans in the dryhouse and the brick machines proper invariably require separate sources of power unless a centralized system of electrical distribution is employed. If the plant is large enough to have its own generating equipment, the power house can be located at any convenient point where fuel can be handled with least expense. Additional motor-driven units can be installed from time to time and the capacity of the plant increased without reference to existing line shafts and belting problems. In many instances, even in machine shops, textile mills, etc., where the buildings are necessarily expensive and of heavy construction and an accurate alignment of shafting and hangers comparatively a simple matter, the transmission losses are from 20 to 40 per cent, or more, of the total horse power developed. Except in the largest brick plants, the buildings are such as to make an efficeint mechanical system of power transmission an impossibility.

The arguments in favor of motor-drive are so numerous and its general desirability has been so thoroughly demonstrated as to make an extended summary of its practical and economic advantages wholly unnecessary. It is without question the cleanest, cheapest, safest, most flexible and most efficient method of distributing and applying power that has yet been devised.

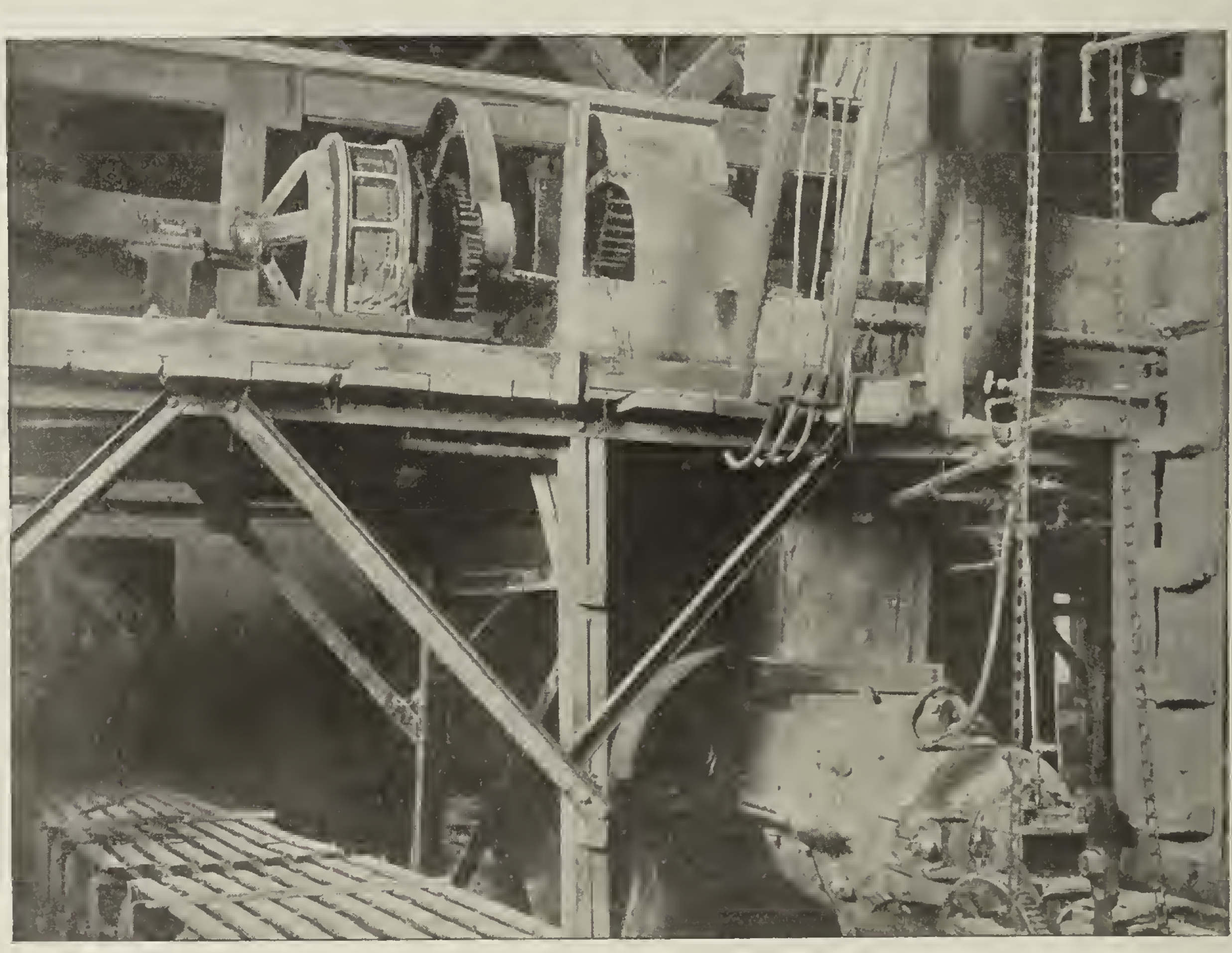
The logical and economical subdivision of motive power in units of suitable capacity for any and all requirements, is an advantage possessed by no other system of power distribution, and one which can not be too strongly emphasized.

Very few localities exist today in which electric power cannot be purchased at reasonable central station rates and the districts fed by central station service are constantly increasing in number and area. Consequently even the smallest brick plants can well afford to consider motor drive for pug mills, conveyors, presses, etc., in place of the cumbersome, slow and inefficient horse-driven sweep. While the first cost may be somewhat greater, it is almost invariably the fact that increased production and decreased labor charges very quickly offset the interest and depreciation charged against the additional capital invested.

The brick making season varies with the location of the plant, from three to eight months, and by hard work two men should be able to make by hand and kiln, an average of 1,000 to 1,500 rough brick per day. Compare this with the single motor-driven machine capable of turning out 100,000 brick per day.

Clay possesses the characteristic property of "plasticity" by virtue of which, when subjected to a deforming pressure and the pressure removed, it preserves the shape of the mold. The degree of plasticity can be varied by tempering or adding in suitable quantities water and sand, sawdust, ashes or other inert material. The further manipulation then falls under one of four general methods, hand molding, stiff plastic, semi-plastic or dry methods. Each of which, with the possible exception of the first, permits of the advantageous application of electric power. The stiff-plastic process is generally recognized as the best and most economical where the nature of the raw clay makes its use possible. It produces a strong homogeneous brick and saves from 20 to 40 per cent of the labor involved in other methods.

In up-to-date plants equipped for electrical operation throughout, a great variety of motor applications is found. The clay or shale is excavated by means of electrically operated shovels and loaded into transfer cars hauled by an electric yard-locomotive, to stock piles where, under action of rain and frost, it is weathered and partially disintegrated. From the stock piles the clays, especially the harder shales, are transferred to the motor-driven roll crushers or dry-pans, and screens, and then by cup conveyors to the pug mill. From the pug mill the now thoroughly mixed and tempered mass is delivered to the auger brick machine where it is forced through dies carefully designed to produce a true cross section with maximum uniformity of density, in the form of a continuous rectangular column. A frame carrying tightly strung piano wires or suitable knives rotating at the proper speed, cuts the issuing column of clay into standard sized block or brick. The green brick are carried by a belt conveyor, which moves somewhat faster than the column issuing from the auger and consequently separates the brick slightly, to the re-presses where they are forced into molds and subjected to heavy pressure.


Pug Mill Driven by General Electric Induction Motor.

This operation smooths the surface, squares up the corners and imprints the maker's name, etc. The brick are now ready for the drying house and kiln.

In addition to the machines mentioned, electric motors find a most satisfactory application driving centrifugal or geared pumps for removing excess water from the clay pits and also for driving the large ventilating fans in the drying house.

Many large plants operate night and day and the lighting systems, series or multiple, arc or incandescent, which the electric companies are prepared to furnish, are admirably adapted for interior mill or exterior yard illumination.

The machinery required and the methods adopted in the manufacture of brick are governed largely by the nature of the raw material available and the desired character of the finished product. For the most part, a careful selection from the great variety of standard motors built for general industrial service will fully meet the requirements of clay working machinery. The range of so called standard motor design is so great, however, that when new installations are contemplated, it is often to the advantage of the customer, and a guarantee of future satisfaction to take up with the electrical manufacturer the requirements of each proposed application.

Twelve-Foot Pug Mill Driven by 100-H.P. Induction Motor, Illinois Brick Co.

The keynote of successful electrification in all manufacturing industries has always been, and must be, co-operation, and the electric companies always welcome suggestions of their customers and no pains have been spared to combine, with the latest engineering skill, theoretical considerations of electrical design and the equally important requirements of practice.

Cost of Electric Operation.

Accurate figures covering cost of electrical operation are difficult to obtain owing to the widely varying factors influencing production. Records from several New England plants with a daily capacity of from 50,000 to 100,000 soft-mud sand-molded brick, indicate a fair average of 15 to 20 molds of six brick each per minute or from 90 to 100 brick per kw-hr. for all electrical power consumed. Plants using the stiff-plastic method show approximately the same output per kw-hr. energy expended in brick machines proper. One plant of 156,000 daily capacity shows a power consumption of 1740 kw.-hr. per day for its auger brick machines. Another plant, with a daily capacity of 200,000 common brick, shows for two successive months an average monthly output of 4,700,500 brick at an average expenditure of 45,600 kw-hr. in driving its auger machines. Where the change from steam engine of other form of mechanical power has been made, an estimated saving in operating expense of from 20 to 30 per cent has often been effected.

While the total power required, including auxiliary devices, varies from 12 to 18 kw-hr., a conservative estimate of power required by pug mills and augers is about 1.5 h. p. per 1,000 brick per 10 hour day, or 11 kw-hr. per 1,000 brick produced.

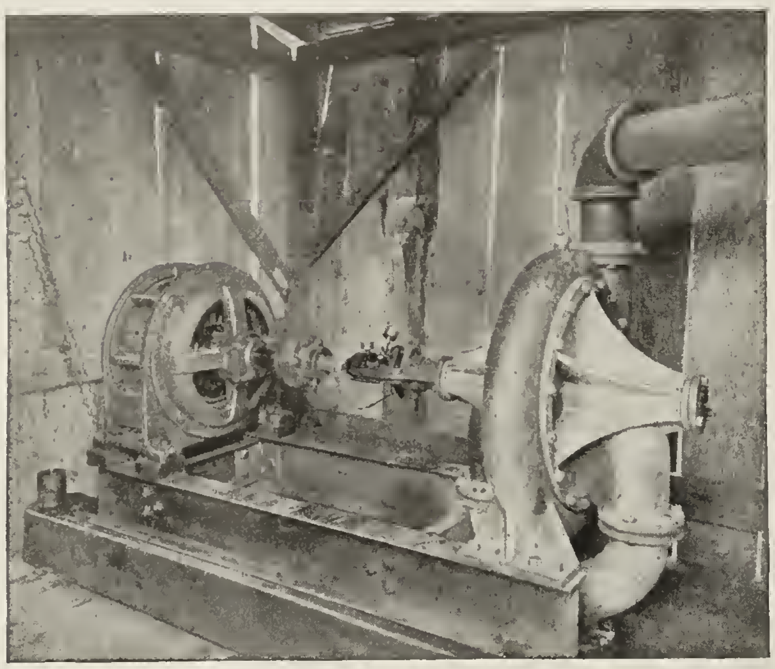
Results From Tests.

The following data were obtained from carefully conducted tests on machines in actual operation. It should be distinctly understood, however, that the horse power required by the several machines mentioned varies widely under different conditions, as will be sufficiently evident from the following figures. Although secured with greatest care for a given set of conditions, in no case should these results be used except for rough estimates of probable requirements. To insure best economy and future satisfaction for both customer and company, it is desirable that each specific case be referred to the nearest local office.

Standard 9 ft. dry pan driven at 170 r. p. m. by 35 h. p. motor. During test a soft dry shale was fed into the dry pan at an average rate of 8.8 cu. yd. per hr. The maximum load recorded was 40 h. p.; the average load, 24.6 h. p. When moderately full of fine dry shale a starting torque of 1,450 ft.-lb. was required. If clay is wet, as in rainy weather, this value may reach 2,000-ft.-lb. and average load may run as high as 50 h. p. When running empty the dry pan required 12.5 h. p.

Special Double Shaft Pug Mill driven at 135 r. p. m. by 25 h. p. motor. This machine is essentially a long trough in which the pulverized clay from the dry pan is mixed with water by means of revolving paddles. The load varies with the consistency and quantity of material handled. The effect of the first factor is small but changes of level in the pug mill due to temporary shut downs of the auger, produce great variations in the power required. With mill nearly empty, 6 h. p. is needed; with clay up to shaft, 14 h. p.; with mill two-thirds full, 25 h. p.; when even with top of knives, 35 h. p., and when full, an average of 44 h. p. When fed at the average rate of 19.5 cu. yd. per hr., the average load on the motor was 31.6 h. p.; when empty, 5 h. p. The starting torque when the mill is two-thirds full is approximately 2,300 ft.-lb.

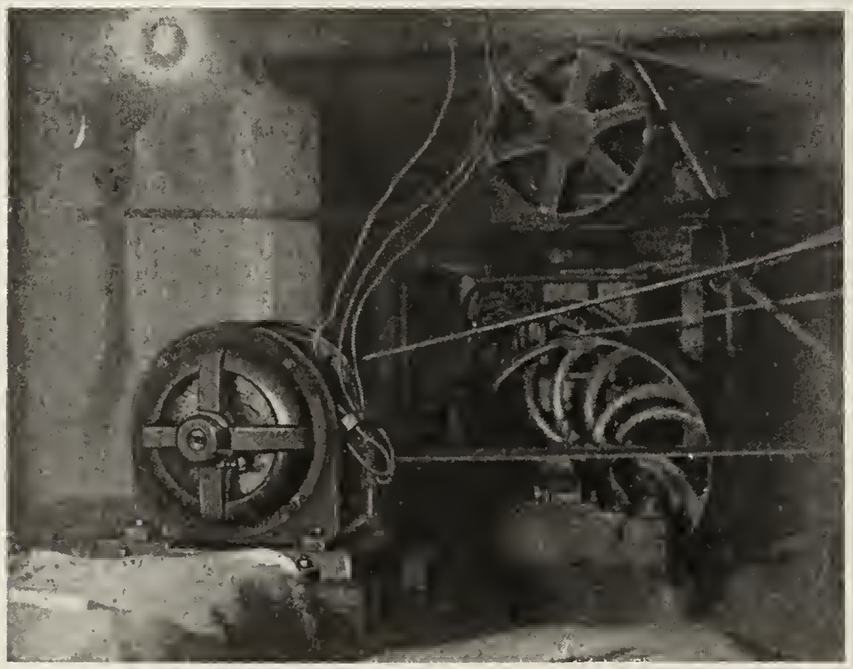
10 ft. Pug Mill driven at 248 r. p. m. by 25 h. p. motor. The power required with varying amount of material in the mill ranged from 5.2 to 25 h. p. When fed at the rate of 5.5 cu. yd. per hr., the average load was 12.5 h. p. With mill full the torque required to start was approximately 300 ft.-lb.



Centrifugal Pump, Motor Driven, at Jones Brick Plant, Macon, Ga.

Special Giant Auger driven at 165 r. p. m. by 125 h. p. motor. This machine is essentially a powerful screw which forces the plastic mass through suitable dies and cuts the issuing clay stream into sections. The load fluctuations are gradual, varying with quantity and consistency of the material from 53 h. p. with the auger nearly empty to 125 h. p. when full. When fed continuously at the rate of 19.5 cu. yd. per hr. and clay level maintained at the top of the blades, the average load was approximately 100 h. p. Other test runs show that the power required varies little with changes of speed ranging from 150 to 180 r. p. m. The starting torque required varies with the quantity and consistency of the clay and the period of idleness but is somewhat more than 2,000 ft.-lb.

No. 1 Giant Auger driven by 35 h. p. motor. This machine when fed at the rate of 5.5 cu. yd. per hr. from the pug mill mentioned above (C) has an average load of 18.5 h. p. The power required varies with the amount of clay in the auger from 12 to 25 h. p. The maximum possible load with hopper full of hard clay is about 35 h. p. The starting torque when the mill is filled to level of shaft is 750 ft.-lb.



Induction Motor Driven Pug Mill.

Eagle Re-press driven at 100 r. p. m. This machine presses 550 fire brick per minute, the average load being but 1.8 h. p.

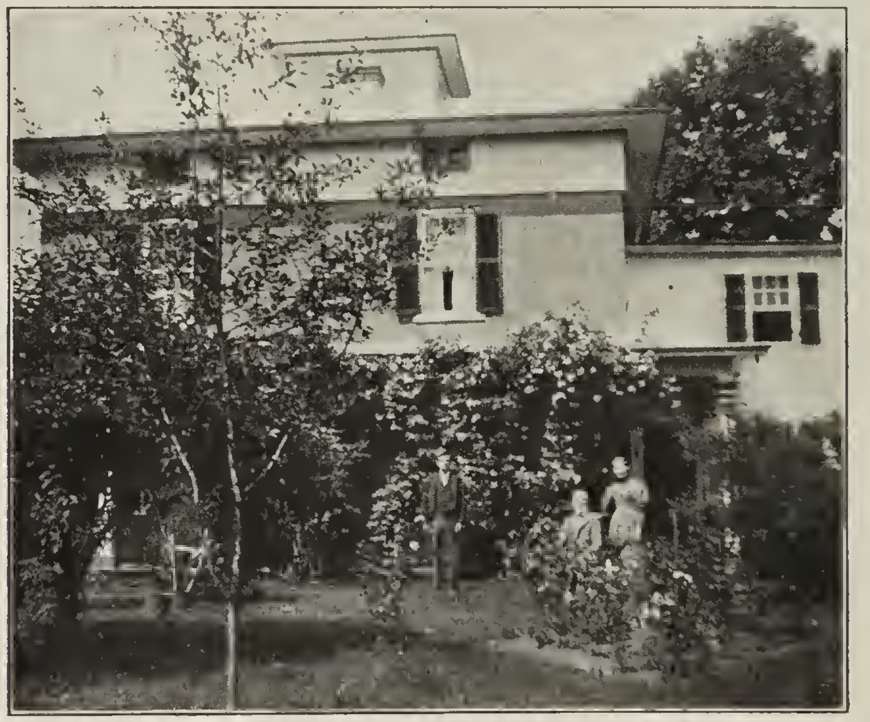
Belt Conveyor. This conveyor consists of a 24-in. belt with 30 ft. span running at 150 ft. per minute and carrying 19.5 cu. yd. of shale per hour. Average load is approximately one horse power and does not vary appreciably with quantity of material moved.

Drying Drum Group driven by 40 h. p. motor. This group consists of a belt conveyor which carries the damp clay from a mixer to a drying drum heated by a blast of hot air forced through it by means of two motor-driven fans. A cup elevator carries the dry clay to the bin above. This group is always operated as a unit and requires approximately 40 h. p. when normally loaded.

Dry Press Group. This group consists of a belt conveyor which brings the dry clay to the pulverizer where it is ground and emptied into a bin from which it is carried by a cup elevator to the dry press. The conveyor requires about 2 h. p. when loaded; the pulverizer takes an average load of about 9 h. p. and the cup elevator, 3 h. p. The dry press running at 130 r. p. m. and pressing 130 brick per minute, carries an average load of 3 h. p. making the total average load when the diversity factor is taken into consideration about 125 h. p.

Century-Old Brick House.

The accompanying illustration, shows a brick house, now standing, in Berlin, Conn., which is said, by old residents, to have been erected about one hundred years ago by Richard Wilcox. As may be seen, the house is in good repair and presents a substantial appearance, which speaks well for the brick and "early-day" methods of construction. It is interesting to note, in this connection, that the clay was dug and the brick made and burned, close by where the house now stands, by Mr. Wilcox.



Century-old Brick House at East Berlin, Conn.

The clay pit, where the clay was secured, may be seen, today, about 200 yards west of the building. Primitive methods were used in the manufacture of the brick. They were molded by hand, dried on the ground and then burned with straw. This interesting old homestead is now owned by Mrs. James Honis, of Hartford, Conn., to whom we are indebted for the loan of the photograph.

WHY ELECTRIC DRIVE MEANS ECONOMY

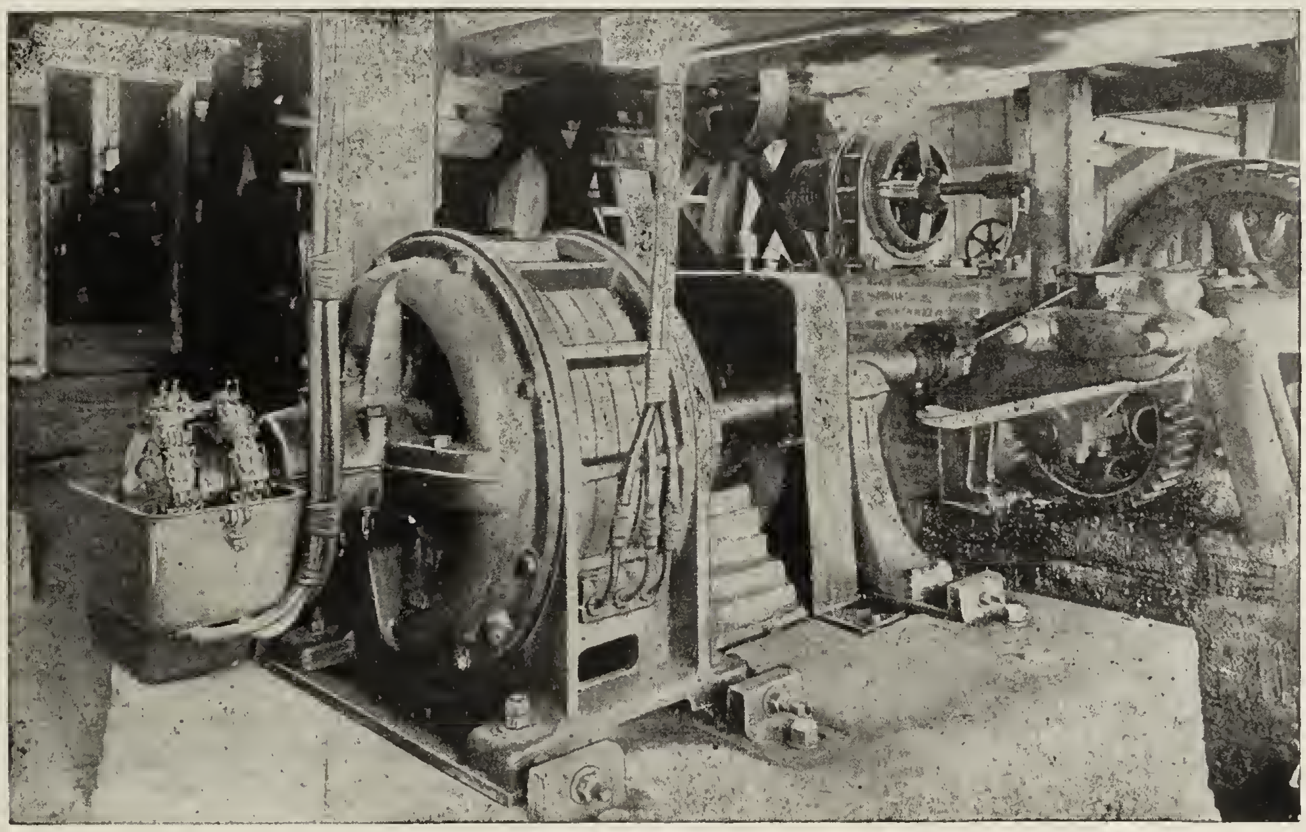
The Ease With Which Business Expansion May be Made is One of the Reasons Given for Installation of the Service

The question of the advisability of using electric drive in brick and tile factories has by the light of experience been decided in the affirmative. There are a great many points that affect the character of power distribution, and in addition to the saving in cost of supplying power to the productive machinery, all these other factors should be given due consideration. The satisfactory and economical handling of raw and finished material, reliability of service and the prevention of injury to individuals must also be considered. Future expansions of the plant should be made possible without undue rearrangement of the original equipment.

The electrical distribution of power so fully meets the requirements of brick factories that it has become recognized as pre-eminent for use in large as well as in smaller plants.

The fact, however, must never be overlooked that the generation of electricity by steam power must necessarily be dearer at the generator than the steam power itself. It is in the method of transmission and application that electricity scores and by installing the motors right near the productive machines, avoiding all unnecessary losses, the highest economy is secured, surpassing commercially every other method of driving.

The first cost of the power generating and distributing system is often of less importance as compared with other factors, which is, however, not the case in regard to the efficiency of the system. The losses in the distributing system naturally affect the size of the generating plant and the value of this lost power is an item of great importance. With mechanical drive, these losses are constant as long as the shafting is running whether the productive machinery is running or not. This is, however, not the case with electric drive as at no load when the motors are not running is there any loss taking place in the system.



Induction Motor Operating Chambers Bros. Brick Machine at Bibb Brick Plant, Macon, Ga.

In making a choice between the various means for power distribution, a manufacturer should naturally bear in mind the effect that the various arrangements may have on the several elements that enter into the manufacturing cost. Manufacturing requirements demand the earning of dividends and this in turn necessitates that the product shall be turned out at the least possible cost.

A mechanical system of driving is, not only inefficient, but inelastic. As machines are added time and again, the shafting, bearings and hangers become so strained and twisted that it is a wonder that they do not break down altogether. An electric system, on the other hand, is perfectly elastic. Motors can be added, from time to time, without in an way affecting the efficiency of the system. Machines can be put in positions, which would be impossible if they were driven by means of belting, and besides this, a perfect control of the individual machines is made possible with the elastic system.

An accurate knowledge of the absolute loss of power in driving shafts and belts would be effected if electric drive was substituted for mechanical drive. There has, however, been many tests made to determine these losses and it has been shown with the plant running at full load it will range from 30 to 60 per cent; an average for clay working plants being 40 per cent. Should only a few machines be running, the losses may, of course, come up to 75 or 80 per cent of the generated power or in other words, four-fifths of the coal consumption is wasted in friction losses. With electric drive the losses are easily determined and will not exceed 25 per cent, of which 12 per cent is consumed in the motors, 5 per cent in the wiring and 8 per cent in the generators. With the electric system it is possible to insert indicating instruments in the various circuits and a complete check can at all times be had on the power consumed by the various machines. This is particularly valuable in testing departments in order to determine the power required for driving brick machinery for different sorts of clay.

The advantage of electric drive is especially apparent where the conditions demand the location of the powerhouse at a distance from the manufacturing buildings. Also when cheap electric power can be purchased from an electric power company, the value of electric drive is still further accentuated. In such cases, the power is supplied over long distance transmission lines at a high voltage, which is stopped down at the manufacturing center to a pressure adopted for the motors.

Hauling Clay in a Motor Car Made by the Atlas Car & Mfg. Co.

The alternating current three-phase system is probably the best adapted for brick factories. This system consists of a three-phase generator composed of a stationary and a revolving part, an exciter for delivering the magnetizing current for the generator fields, a system of distributing wires and the motors.

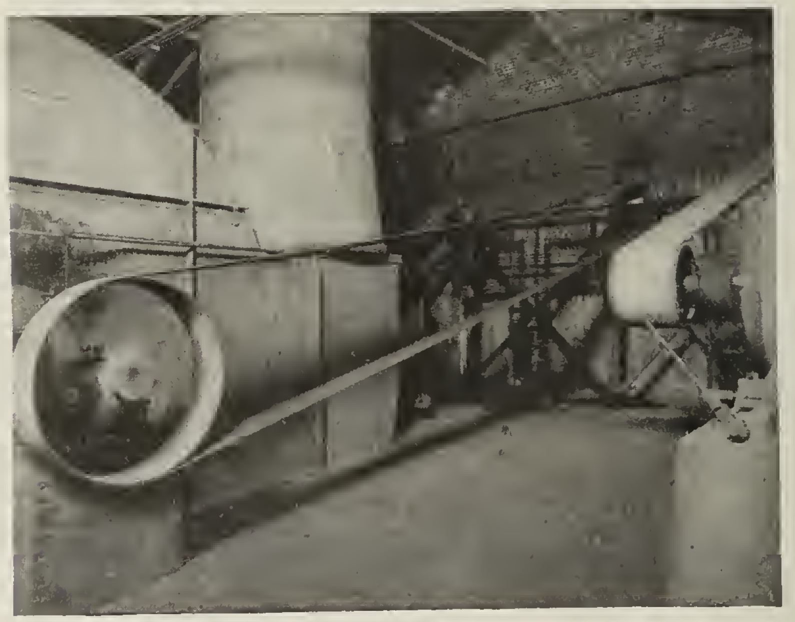
The frequency of the system is usually 60 cycles as the same gives good lighting results, at the same time not causing any excessive inductive effects. The three phase system has the advantage over the two phase in that the wiring is simpler and in that the amount of copper required for the distributing system is less.

The alternating current system is simpler than the direct current system in that no current has to be delivered to any moving part of the motor. In the direct current system, current must be delivered to the rotating armature of the motors through carbon brushes and a commutator. This commutator is the main difference between alternating and direct current motors. The brushes and the commutators are the only parts of the direct current motors in which trouble is liable to arise due to accumulation of dust and dirt. The simplicity, durability and freedom from break-down are, therefore, the main advantages of the alternating current motor. The pressure best suitable is 220 volts as the danger by coming in contact with the wires is not very great and as this pressure can directly be used for the lighting system, which in all cases naturally is provided. Where very large motors are used, it may be advisable to use a pressure of 440 or 550 volts, as, with this voltage the size of the wiring can be considerably reduced. Step-down transformers for the lighting system will, of course, have to be provided in such a case.

For driving brick machinery, where a high starting torque is required, the induction motors with phase-wound secondaries will exactly meet the conditions. The secondary winding itself has a very low resistance, which means high efficiency and good regulation. By the insertion of external resistance in the secondary winding the motor will be able to develop maximum torque at the start with moderate starting current. The motor should be large enough to carry the load under normal conditions without overloading it and for brickmaking machinery the motors should be able to develop a starting torque of at least two times the normal running torque. Each motor should be provided with its own starter complete with overload and no voltage features. The former device will disconnect the motor on heavy overloads and the latter will disconnect the motor if the plant for some reason is shut down.

The operation of every machine and conveyor by its own motor produces a very satisfactory appearance but it may not return the most economical result. Very small motors are not so efficient as larger ones and besides they are more expensive per unit of power. For this reason it will frequently be found advisable to drive a group of smaller machines with one motor of a larger capacity providing that the shafting for these machines does not become too extensive.

An example showing the actual saving of an electrically driven plant as compared to a mechanically driven may prove of interest. Through the courtesy of the American Clay Machinery Co., of Bucyrus, which company has installed several very successful electric driven plants, we have been fortunate in securing data that will give a very accurate idea of the saving that can be accomplished.



Induction Motor Driving Forced Draft Fans.

Assume a brick plant with a yearly production of 25,000,000 brick, which has to be equipped with the following productive machine.

1 brick machine, consuming	75 h.p.
1 pug mill	50 h.p.
3 dry pans, each	35 h.p.
Represses and cutters	35 h.p.
Elevators	20 h.p.
Conveyors	8 h.p.
1 exhaust fan	50 h.p.
1 disc fan	10 h p.

This will total approximately 350 h.p., the fans running 24 hours, but all of the other machinery only 10 hours per day.

STEAM DRIVEN PLANT WITH SHAFTING.

The average load during the period when the plant is running will be approximately 85 per cent.

COST OF INSTALLATION.

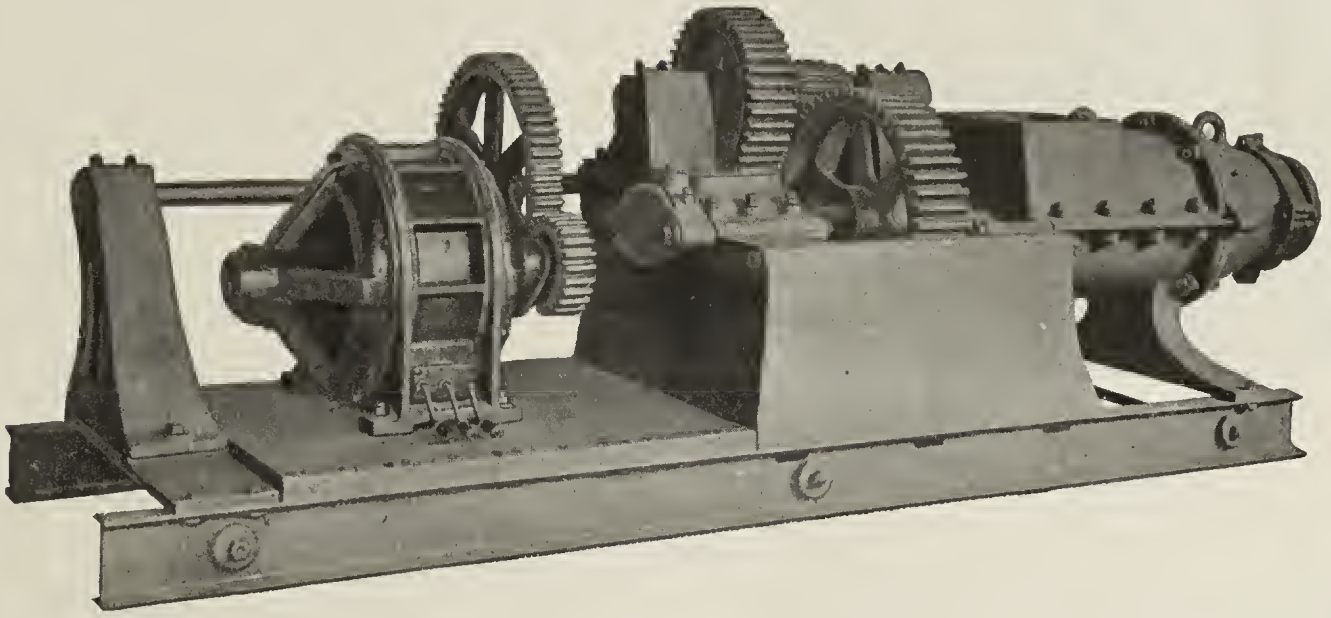
1 600-h.p. boiler equipment, complete with stack, pumps, piping, etc.	$9,000.00
1 400-h.p. engine	4,500.00
1 60-h.p. engine	2,200.00
1 15-h.p. engine	600.00
Belting, shafting, complete	2,500.00
Total cost of installation	$18,800.00

Horsepower Hours Produced per Year:

400 h.p., 85%, 10 hrs., 300 days = 400x.85x10x300 =	1,020,000
75 h.p., 85%, 24 hrs., 300 days = 75x.85x24x300 =	460,800
Total h.p. hours	1,480,800

COST OF PRODUCTION.

Fuel 8 lbs. per h.p. hour = 5,900 tons at $2	$11,800.00
Interest, depreciation, taxes, insurance, etc., on boilers and engines, 15% on $16,300	2,445.00
Interest, depreciation, taxes, insurance, etc., on shafting and belting, 30% on $2,500	750.00
Oil, waste, etc	750.00
1 day engineer at $75	900.00
1 day fireman at $60	720.00
1 night engineer at $60	720.00
Total cost of operation	$18,085.00



General Electric Induction Motor Direct Connected to the Heavy Duty Auger Brick Machine Built by the American Clay Machy. Co.

STEAM DRIVEN PLANT WITH ELECTRIC MOTORS.

The average load in this case is only 80%.

COST OF INSTALLATION.

1 500-h.p. boiler, equipment, complete with stack, pumps, piping, etc	$7,000.00
1 350-h.p. engine	4,000.00
1 75-h.p. engine	2,200.00
1 250-k.w., 3-phase generator	2,800.00
1 50-k.w., 3-phase generator	1,050.00
Cabling	750.00
1 75-h.p. motor for brick machine	675.00
1 50-h.p. motor for pug mill	475.00
3 35-h.p. motors for dry pans	1,050.00
1 35-h.p. motor for cutters and represses	350.00
1 20-h.p. motor for elevators	300.00
1 8-h.p. motor for conveyors	115.00
1 10-h.p. motor for disc fan	145.00
1 50-h.p. motor for exhaust fan with variable speed regulator	550.00
	$21,460.00
Less extra cost for buildings	2,500.00
Total cost of installation	$18,960.00

Horsepower Hours Produced:

350 h.p., 80%, 10 hrs., 300 days = 350x.80x10x300 =	840,000
75 h.p., 80%, 24 hrs., 300 days = 75x.80x24x300 =	432,000
Total h.p. hours	1,272,000

COST OF PRODUCTION.

Fuel 7 lbs. coal per h.p. hour = 4,450 tons at $2	$8,900.00
Interest, depreciation, taxes, insurance, etc., 15% on $18,960.00	2,845.00
Oil, waste, etc	500.00
1 day engineer at $75	$900.00
1 day fireman at $60	720.00
1 night engineer at $60	720.00
Total cost of operation	$14,585.00
Cost with mechanical drive	$18,085.00
Cost with electric drive	14,585.00
Saving by electricity = 19½%.	$3,500.00

For gas-driven plants the respective costs will be somewhat less than with steam-driven.

Assume the same plant as before, but with gas engine, we get:

MECHANICALLY DRIVEN PLANT.

Cost of Installation.

Producer equipment	$11,000.00
Gas engines	22,000.00
Belting and shafting	2,500.00
Total	$35,500.00

COST OF PRODUCTION.

Fuel 1½ lbs. of coal per h.p. hour = 1,010 tons at $2.50	$2,525.00
Interest, depreciation, taxes, etc	5,700.00
Oil, waste, etc	500.00
1 day engineer at $75	900.00
1 helper at $40	480.00
1 night engineer at $75	900.00
Total	$11,005.00

ELECTRICALLY DRIVEN PLANT.

Cost of Installation.

Producer equipment	$9,000.00
Gas engines	18,000.00
Generators	3,850.00
Cabling	750.00
Motors	3,660.00
	$35,260.00
Less extra cost for building	2,500.00
Total	$32,760.00

COST OF PRODUCTION.

Fuel 1½ lbs. per h.p. hour = 950 tons at $2.50	$2,275.00
Interest, depreciation, taxes, etc	4,920.00
Oil, waste, etc	300.00
1 day engineer at $75	900.00
1 helper at $40	480.00
1 night engineer at $75	900.00
Total	$9,775.00
Cost with mechanical drive	$11,005.00
Cost with electric drive	9,775.00
Saving by electricity = 11%.	$1,230.00

That there is a very large field open for the introduction of electric drive in existing brick plants and the tremendous saving that thus could be accomplished is shown by the government's statistics.

Number of plants	4,634
Number of plants reporting	3,476
Number of steam engines	4,113
Total h.p.	246,200
Number of gas engines	222
Total h.p.	5,245
Number of electric motors	128
Total h.p.	3,036

Another place where a considerable saving can be made is by adopting electricity for the hauling of the clay from the clay banks to the factory. In one case in a brick plant outside of Chicago where this system has been installed, the operating force alone for this part of the plant was reduced by about ten men.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. JULY 15, 1912 No. 2

THE AGE OF ELECTRICITY.

It has been well-said that this is an age of electricity. The whir of the electric motor is heard on every hand—in the field, in the workshop and everywhere that machinery has replaced human hands in the manufacture of the commodities and necessities of life.

The small motor of the past has paved the way for the great motor of the present. Plants that once were steam-propelled, because it was believed that electricity had its limitations are now thoroughly equipped with the silent power and no factory is too large or the requirements too exacting.

In the pioneer days of the electric-driven motor it was the small plant that first saw its advantages. Individual motors were attached to small machinery. The factory man saw the economy of it. Cumbersome overhead shafting and the network of treacherous belting with its constant source of trouble and expense became a thing of the past.

Then came the bigger factory man. If the electric-driven motor was an advantage to his smaller brother why not to him? He called in his engineering experts. Powerful motors were built. These drove either ponderous machines direct or moved others in a battery.

The brick and clay product field is one of the last of the great industries to awaken to the economy of electricity. Many of the larger and more progressive plants are fully equipped with the new power. Motors drive great revolving shovels in the clay pits. Motors draw the loaded cars of clay from the pit to the pug mill. Motors grind and temper the clay and motors run the brick and tile machine. And this is not the end, for until the finished clay product comes from the kiln electricity furnishes the motive power.

In some of the larger brick yards even, electricity is used to set the brick in the kilns, immense carrier systems with automatic devices being installed—eliminating the hand-setter and increasing the capacity until it is possible for one yard in mind to turn out 450,000 brick every working day.

Verily this is an age of electricity and the clay pit feels the march of progress as well as the field and the shop.

ADVANTAGES OF ELECTRIC POWER.

The advantages of electric power for use in clay manufacture have proven to be many. The electrical distribution of power meets the requirements of clay plant usage so thoroughly that there is now no question as to its practicability. Not the least of its adaptability to this class of work is the economy of operation afforded, the satisfactory and convenient handling of raw and finished materials, lessening of liability to injury to workmen and the fact that any number of machines may be shut off without in any way affecting the operation of the other machinery.

The elasticity of this system is another point in its favor as additional motors may be added from time to time without in any way affecting the efficiency of the system. Machines readily can be changed, and a perfect control of individual machines is possible where electric systems are in use. While electricity generated by steam power is more expensive than steam power, in transmission and application it scores a point as by installing the motors near the productive machines, all unnecessary losses are avoided and the highest economy of operation is secured, thus surpassing every other method of drive and unlike mechanical drive when the machinery is not running, the power is shut off and no loss takes place in the system. By the insertion of indicating instruments in the various circuits, it is possible that a complete check may be had on the power consumed by various machines. In testing the power required for driving machinery for different sorts of clay, this is an important and useful feature. Special devices provide for disconnecting the motor, if for any reason the plant is shut down. Experiments have proven that with the operation of each machine by its own motor, the larger machines are more efficient as well as more economical of operation.

TRAGIC ROLE OF CONCRETE CONSTRUCTION.

From Sydney, Australia, comes a protest against the construction of "Ferro-Concrete" and it seems that in Australia this form of construction is no more substantial than in the United States. In a recent issue of "Building" in Sydney, an account is given of the collapse of a concrete building in which two men were killed and several others injured, this being the second instance within two weeks where concrete failures have caused death. Steps are being taken by legislators in Sydney to prevent further repetitions of these tragedies. The institute of architects of New South Wales has also taken steps to secure proper building regulations, governing the use of concrete for building purposes. Mr. Jones, the president of the institute, had the following to say in this connection:

> "The necessity for regulations governing that class of buildings in Sydney and its metropolitan area is becoming more and more apparent every day, and it is a thousand pities that public attention has to be called to it by sacrifice of human life."

Tell your customers about the superior quality of your brick. Don't say too much about the other fellow.

EXPOSITION COMPANY ENTERTAINS.

Enthusiastic Party Meet at Informal Dinner—Beauties and Merits of Burned Clay Shown in Moving Pictures.

Not since the conventions and Clay Show has there been such a gathering of enthusiastic clay men as that which met in the "Gray Room" of the Sherman House, Chicago, Ill., on June 28, 1912, in response to an invitation extended by the Clay Products Exposition Co.

A large number of exhibitors at the recent Clay Show were in attendance, many coming from Ohio, Indiana, Iowa and other states throughout the country.

After a pleasant informal dinner, which added much to the sociability of the occasion, the guests were given a realistic trip through the Clay Show by means of moving picture films, taken during the exposition.

The Clay Products Exposition has been heralded from San Francisco to New York as a most gratifying success, and was, by all odds, the most important event ever held in connection with the clay trade. A part of this show was interestingly shown by the marvelous moving picture film, which gives the exposition permanent life, as it can be reproduced in picture form wherever a moving picture machine is found.

The first film showed the arrival of President Taft at the exposition. Alighting from his automobile, he went into the building and was seen delivering his address to the clayworkers of the United States. After the speech, the spectator was transported, by the moving pictures, around through the exposition and was shown a number of exhibits, views of the jostling crowd, the bungalow and many other things of interest. The whole film is one of wonderful interest to the clayworker and to those persons selling and using building material. In order to make the film of general public interest to everybody a little story has been woven about the film, with a moral pointing to the use of clay products, which makes it an interesting rival of any picture drama which is seen in the picture shows of today. The thought running through the drama in a short synopsis follows:

Percy Jones aspires to the hand of Mabel Jackson. Unfortunately, "Father" Jackson is not willing and orders Percy off the place. The young people, however, decide to elope and Percy calls early next morning with a fleet automobile to accomplish their escape. Just as they enter the car their flight is discovered and old Jackson presses a horse and buggy into service and gives chase. Owing to extremely bad streets and roads which hamper the progress of the automobile, old Jackson gains steadily. Just as he is about to overtake the pair they strike a "well paved brick roadway" and this brick roadway makes it possible for them to escape to the minister. Just after the ceremony has been performed Jackson arrives on the scene, but they again elude him.

The young people decide to buy a home and are inclined towards a nice frame building similar to that in which Mabel had lived all her life. Happening to see a poster advertising the Clay Products Exposition and the $3,000 brick bungalow which is to be given away they decide to attend the show and together they go through the exposition and view the different exhibits. From the exposition they go to an architect who strongly advises them to build of brick because of the insignificant extra cost and the overwhelming advantages of brick construction. In company with the architect they inspect some beautiful low-cost brick houses and make a wise selection as a result of their attendance at the Clay Products Exposition. A few days later, having become settled in their new brick home, which they are careful to see is located on a "well paved street," they decide to call on Father Jackson and see if they can effect a reconciliation. On alighting from the street car at the Jackson corner, Mabel is completely overcome on seeing her much-beloved "frame" home in flames and her distracted father surrounded by his shattered household goods and the fire fighting firemen: "Old Grump" is led away from the ruins in a dazed condition and is taken to the new brick home which so impresses him with the wisdom of the young people that he cheerfully gives them his blessing and makes his home with them for the remainder of his life.

The great and shining moral of the film is that burned clay will work wonders in many of life's affairs, including love and matrimony.

In addition to this film, others were also shown giving a complete picture story of the manufacture of paving brick, the proper construction of a paved roadway and some of the beautiful brick paved highways in Ohio. One picture showed the diversified uses of brick paved country roadways depicting children roller-skating to school; teams hauling heavy loads up hill with ease; families automobiling to town to market, etc. Another film showed the manufacture of brick in Chicago, clearly portraying a speed of 350,000 brick in eight hours.

A few remarks were made by Mr. R. C. Penfield, president of the Clay Products Exposition Company, touching upon the excellent results which had been secured from the last Exposition and promising even greater benefits from the next exposition, which will be held at the Coliseum, Chicago, February 26 to March 8, 1913. Those in attendance were most enthusiastic over the past exposition, and the results which the exhibitors secured from the exhibition, and also over the next show, and all expressed the intention of going into the new exposition project more enthusiastically than before.

All exhibitors in the 1912 show had been invited and those who could not attend sent regrets. Each exhibitor was entitled to a guest, and 100 assembled in response to the invitation.

A number of ladies were in attendance and were enthusiastic in their praise of the moving picture show, and all declared themselves unanimously in favor of brick houses. Among the ladies present were: Mrs. John Worthy, president of the Chicago Women's Outdoor League; Miss Maud Jones, secretary of the National Good Roads Association; Astrid S. Rosig, dealer in sewer pipe, drain tile and other clay products; Mrs. M. Brandenburg, associate editor of "Brick and Clay Record."

Clays Should Be Studied.

There is still considerable guess work used in manufacturing clay wares which, no doubt, accounts for some of the poor quality goods which creep into the market and are a detriment to the entire industry. The successful manufacturer studies his clays and leaves no stone unturned to learn the best and most approved methods of manufacture.

He Got Action.

A $2.00 ad in the last issue of "Brick and Clay Record" resulted in the sale of a clay feeder, according to a recent letter from A. C. Gordon, proprietor of the Weiser Brick Yard, Weiser, Idaho. Mr. Gordon believes in publicity as is evident from the fact that he sent $4.00 for two more insertions of the original ad, minus the machinery sold.

THE PASSING OF THE HORSE.

Electric Truck Brings About New Era of Transportation. Heavy Shrinkage Noted in Horse-drawn Wagons.

We hear a great deal nowadays about under-production and over-consumption. A prime factor in bringing about the latter is the large number of horses used for haulage and transportation purposes, when the advent and efficient development of the motor truck would seem to indicate no real need for their presence.

The advent of the electric truck has brought about a new era of transportation. The percentage of shrinkage in horse drawn vehicles in Chicago during the past year amounted to 15.7 per cent for one-horse wagons and 13.5 per cent for two-horse wagons. The aggregate shrinkage is 14.6 per cent for the year. Altogether 6,753 horse drawn vehicles were discarded in Chicago between May 1, 1911, and May 1, 1912. Since an electric truck handles tonnage equivalent to that of three two-horse wagons the saving in time, money and congestion of traffic becomes truly tremendous.

Several unique advantages conspire to make the electric truck one of the leading substitutes for the horse-drawn truck. The more intelligent wagon drivers readily familiarize themselves with the operation of an electric truck and cover their old routes as perfectly, and swiftly, as formerly. Nine cases out of ten, the routes have become greatly amplified—they cover more territory.

And, should they be unable to resist a natural temptation to rush back to the garage at top speed at the close of the day, the electric refuses to go faster than is necessary. It is geared to run at a certain maximum speed, and no faster. This speed, while ample for commercial purposes, lessens the inclination to tear wear-resistance out of trucks and mechanical parts by fast driving.

The average life of an electric truck, based on actual records, is at least 10 years, with a consequent depreciation charge of 10 per cent yearly. The average life of even the best Percheron draft horse is only 4 years, the depreciation consequently higher—25 per cent.

All of which will furnish data for some mighty interesting figuring to the man who is worried about how to successfully combat the deadly certainty of depreciation charges in his business.

CONDITIONS FAVOR ELECTRIC EQUIPMENT.

Many peculiar conditions exist in clay working plants which make electric power especially suitable for the operation involved. Much of the machinery is widely separated, which makes transmission from line shafts difficult and results in a large amount of lost power.

In addition to the driving of machinery, electricity is adaptable to the operation of industrial railway systems for the haulage of clay and the operation of electric shovels, isolated pumps, and fans.

The advantages of electric drive are now so generally recognized that the main question is whether the manufacturer can purchase his power at a lower cost than he can generate it in his own plant. Every plant has its own peculiarities, but in general the central station power offers exceptional possibilities for profitable business. In some localities steam drying is necessary, but even in these instances an off-peak rate can make central-station costs comparable with isolated-plant costs.

In plants which use the waste heat method of drying, there is no question as to the marked economy of central station power. One saving, in particular can be effected in the operation of the blowers and exhaust fans which are in service continuously 24 hours a day.

SECOND-HAND BRICK MUCH USED.

Scarcity of Good Brick in New York Evidenced by Extensive Use of Second-Hand Brick.

One of the most remarkable evidences of the scarcity of good brick in New York just now is the presence of numerous buildings being erected in the most desirable residential and shopping centers of New York City with faces of second-hand brick. The picture shows a building, under construction, at the northwest corner of Madison avenue and 45th street, New York City, just around the corner from the magnificent new Grand Central Station.

The structure, to be known as the Carlton Chambers, will be a studio and store building. It has a steel skeleton frame and is fireproof throughout, but owing to the scarcity of new brick and the liability of running foul of the building department, which is carefully watching for the presence of pale brick in new building work just now, second-hand brick were used for the walls which will be sand blasted and stuccoed and the finished job will probably be one of the most artistic structures in the fashionable neighborhood in which it stands.

Showing Use of Second-Hand Brick in New York City. Whoever Heard of Using Second-Hand Concrete?

The value of the picture lies principally in the fact that it demonstrates the long life of brick as a building unit. It is indestructible, because it can be used over and over again. It always has a market value, even bats being used to effect artistic designs in walls and decorative façades.

GERMAN ASSOCIATION TO VISIT AMERICA.

We are advised that the German Association of Clay, Cement and Lime Manufacturers is arranging a trip for its members to America, in September next. The party will attend the meeting of the International Congress of Applied Chemistry, which will be held at Washington, D. C., after which a two weeks' tour of inspection will be made to various large clay, sand-lime and cement establishments. Among the points of interest visited will be the extensive potteries of East Liverpool, O. One day will be devoted to inspecting the immense clay plants in and about Chicago.

We will be glad to welcome our foreign brethren and assure them that every effort will be made to make their stay both profitable and interesting.

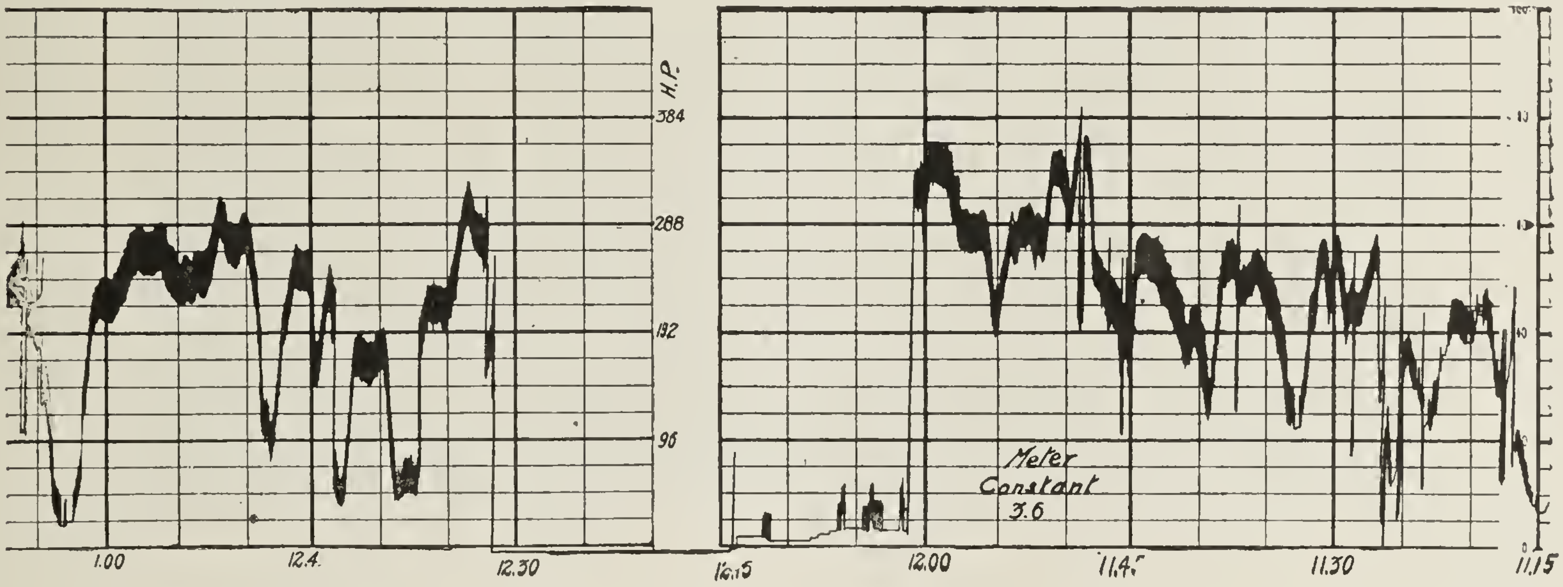
ELECTRICITY FEASIBLE IN BRICK PLANT

Ten Questions, That Are Asked Generally by Manufacturers Who Seek Greater Motive Power and Efficiency

WHEN market prices for common or front brick are low the manufacturer is prompted to seek ways and means of cutting down his manufacturing costs and at the same time maintain the quality of his product. Labor is always a fixed cost. If it varies at all it is more likely to increase than to diminish. His over-head charges, such as insurance, depreciation and repairs, rent, royalties and financial obligations cannot be discounted. There is only one way, therefore, whereby he can hope to cut down his operating expenses and that is by calking up the leaks in his engine room.

Fuel costs, engine up-keep, machinery supplies and repairs and transmission factors are elements of greatest burden to the manufacturer of brick or, in fact, any other product requiring heavy machinery and corresponding heavy wear and tear upon equipment.

In the eastern part of the country, the subject of cheaper manufacturing costs has been a particularly live one ever since 1909, when producers experienced something like a boom and then a demoralizing slump which existed up to the time the manufacturers determined to correct conditions which were fast bringing them into ruin. Their first step was to decide upon some way whereby they could purchase their supplies in a lump and distribute them according to the requirements of individual plants, and, at the same time, try to effect some economical plan to permit them to stop the waste which the motive power and power transmission methods employed on most of the yards in the Hudson valley, had at times wiped away a large share of their profits in dull years.



Curves Showing Wattmeter Record of Combined Loads on Two 100-H.P. 550-Volt Induction Motors Driving Two Separate No. 8 Chambers Bros. Auger Brick Machines, Capacity 100,000 Brick a Day Each. The fluctuations are probably due to Irregularity in Feeding Clay Into the Machines or to Presence of Sand In Varying Percentages In the Clay.

Accordingly one large plant employed a consulting engineer who studied the savings effected on the several yards in the district where experiments had been carried on with electrical equipment for some time. This plant used electricity exclusively for the operation of its hauling. A complete electric railway has been in operation at the yards of the Empire Brick & Supply Co. for many years and has demonstrated, beyond doubt, that it has really paid to install it. Other electrically driven plants were also studied and, while the findings of this engineer are not yet ready for publication, they show that electricity is feasible for brick yard work, not only for hauling clay in electric power train loads from pits to pug mills and throughout the plant, but that individual power drive is more economical than the old style steam engine and shaft drive with belt transmission.

Ten Questions Asked by Brick Makers.

The brick manufacturer whose equipment is all run down and produces power for him at a positive loss, naturally considers the question of ripping out the old plant and putting in either a central station of his own or installing electrical equipment to be supplied with power from a public central station some distance off. He has one other alternative; to install a turbine in place of his antiquated "steam eating" engine and feed it from his original steam plant. But in nine cases out of ten the boiler equipment is as badly at fault as is his machinery and that, too, gives way to the electrical equipment complete.

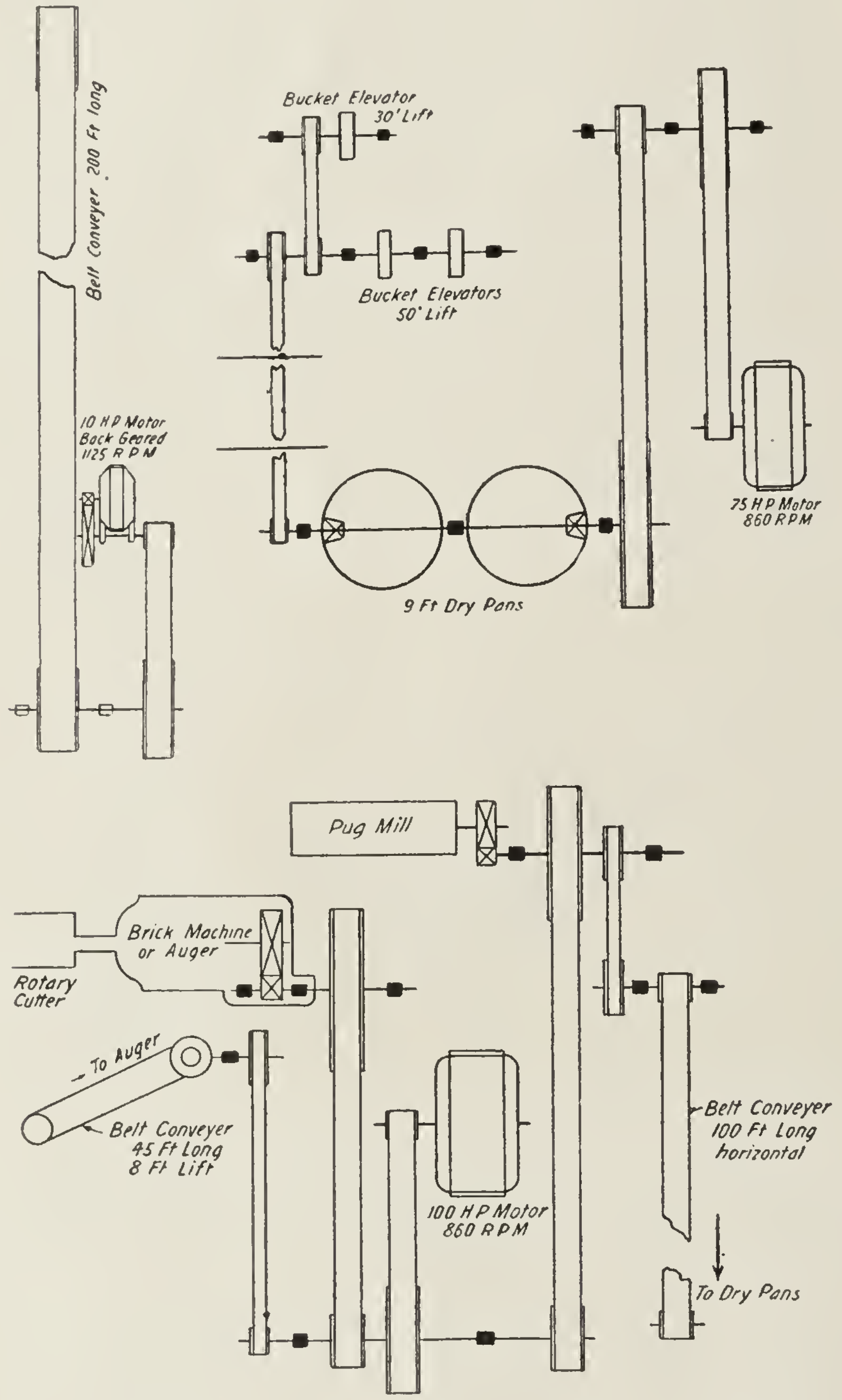
But the manufacturer wants to know what it will cost to put in an electrical equipment. He wants to know when it will pay for itself in greater efficiency. He wants to know how electricity has behaved on other brick plants especially in his vicinity. He is curious as to maintenance charges and the rate of depreciation. He wants to know whether he will have to employ more skilled labor to operate it.

These and other questions were put to brick manufacturers who have used electricity in one way or another on their plants, by "Brick and Clay Record." They are enlightening and in some cases contain information never before published on the subject. The questions follow:

1. What will a complete electrical equipment cost?

Accurate figures covering cost of electrical operation of brick plants are difficult to obtain owing to the widely varying factors influencing production. Records from several New England plants with a daily capacity of from 50,000 to 100,000 soft mud sand molded brick indicate a fair average of 15 to 20 molds of six brick each per minute or from 90 to 100 brick per kilowatt hour for all electrical power consumed. Plants using stiff-plastic methods show approximately the same output per kilowatt hour energy expended in brick machines proper. One plant of 156,000 daily capacity shows a power consumption of 1,740 kilowatt hours per day for its auger brick machines. Another plant with a daily capacity of 200,000 common brick shows for two successive months an average monthly output of 4,700,500 brick at an average expenditure of 45,600 kilowatt hours in driving its auger machines. Where the change from steam engine or other form of motive power has been made an estimated saving in operating expense of from 20 to 30 per cent has often been effected.

While the total power required including auxiliary devices, varies from 12 to 18 kilowatt hours, a conservative estimate of power required by pug mills and augers is about 1.5 h. p. per 1,000 brick per 10 hour day or 11 kilowatt hours for every 1,000 brick produced in the Hudson river (N. Y.) district, the Rose Brick Works at Roseton and the Empire Brick & Supply Co. which are partially equipped with electricity.


Belt Conveyer 200 Ft long
Bucket Elevator 30' Lift
Bucket Elevators 50' Lift
10 H P Motor Back Geared 1125 R P M
75 H P Motor 860 R P M
9 Ft Dry Pans
Pug Mill
Brick Machine or Auger
Rotary Cutter
To Auger
Belt Conveyer 45 Ft Long 8 Ft Lift
100 H P Motor 860 R P M
Belt Conveyer 100 Ft Long horizontal
To Dry Pans

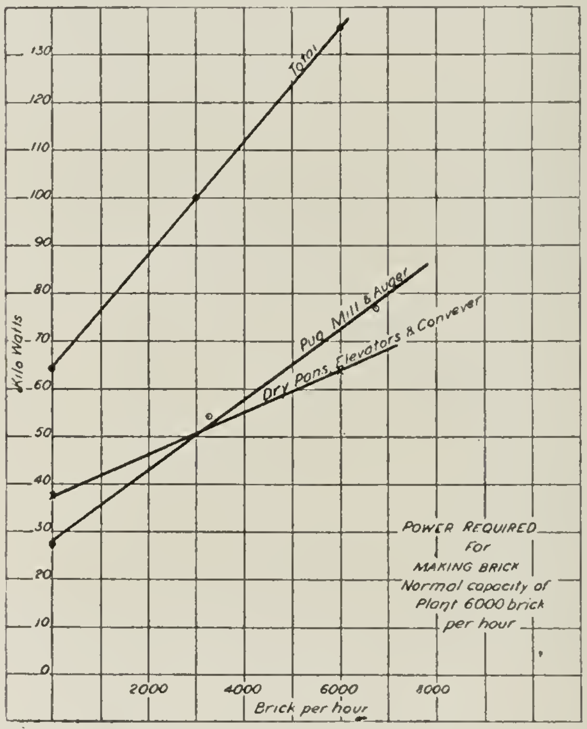
Showing Machinery Layout of Brick Plant Changed from Steam to Electric Drive Supplied with Westinghouse Motors.

4—Of what does an electrical equipment in a brick plant consist?

The most completely equipped plant that the writer knows of is that of the Salt Lake Press Brick Co. whose equipment consists of the following. The subjoined table shows the number of motors, their horse power, the revolutions per minute, volts and the uses to which these motors have been put.

MOTORS INSTALLED AT THE SALT LAKE PRESS BRICK COMPANY.

No. of motors.	HP.	RPM.	Volts.	Operating on
1	7½	1200	440	Coal conveyor at Smith kiln
1	20	900	220	Fan at Smith kiln
1	10	1200	550	Press No. 2
1	10	1200	440	Fan on Round kiln
1	2	1800	220	Coal elevator old plant
1	7½	720	440	Waste elevator new plant
1	5	1200	220	Bonnot cutter new plant
1	10	1200	220	Clay conveyer belt new plant
1	75	720	220	Crusher new plant
1	50	900	440	Crusher new plant
1	100	600	220	Auger machine new plant
1	7½	720	220	Dryer fan new plant
1	10	1200	440	Wire cut belt new plant
1	5	1200	440	Water pump
1	50	900	440	Pug mill new plant
1	25	600	220	Clay elev. new plant
1 5011-ITC	22	...	440	Hoist south crane N. plant
1 ITC-5011	22	...	440	Hoist north crane N. plant
1 ITC-5011	22	...	440	Drive south crane N. plant
1 ITC-5011	22	...	440	Drive north crane N. plant
1	10	1200	440	Coal conveyer new plant
1	55	514	220	Extra fan new plant
1	15	1200	440	Funnel fan old plant
1	10	1200	440	Press No. 3 old plant
1	10	1200	220	Press No. 1 old plant
1	5	1200	220	Water pump old plant
1	75	720	440	Crusher old plant
1	35	900	440	Clay elev. new plant
1	5	1800	220	Clay conveyer to press No. 1 old plant
1	2	1800	440	Clay conveyer new press room new plant
1	2	1800	440	Small drain elevator
1	5	1200	440	Coal elevator new plant
1	1	1800	440	Blower blacksmith's shop
1	5	1200	220	Coal conveyer funnel kiln
1	3½	1200	440	Clay conveyer press No. 2
1	15	1200	220	Mill drain elevator
1	5	1200	440	Drain elevator



Showing Power Required for a Normal Capacity Plant.

5—What is the proportionate depreciation in an electrical plant and a steam plant and do I have to employ skilled labor to operate it?

The depreciation on a steam plant in a brick yard is about 4.3 per cent a year. On an electrically driven plant, it is about 2.1 per cent. It is not necessary to employ skilled labor save one general mechanician.

6—Are the motors of such construction that they are intricate; that is, are they easily deranged?

A great deal of the electrical installation work on a brick plant is in nature very simple. Most problems have been taken care of by the application of a simple standard, bolted motor. Some brick plants have already installed direct connected motors, but while these work satisfactorily, most engineers recommend induction motors for new plants as their working principle is so simple as to be almost automatic in operation. The amount of power that is required by the various machines is something that depends a good deal on the kind of clay that is used. The American Clay Machinery Co., cooperating with the General Electric Co. has been conducting tests looking to the proper size of motors to go with various clay working machines so that, once the proper size motor is determined, there should be absolutely no failure in the motive unit in each machine.

7—Would it be necessary to dispense entirely with belting?

This is optional with the management of the plant. There has been a tendency toward gearing individual motors to certain machines in those plants where electricity has been installed, such as auger machines, grinding pans and pug mills. On the other hand one manufacturer of brick machinery expressed himself as being in favor of bolting instead of gearing even on new installations on account of the flexibility of the belt protecting the apparatus from shock. Engineers are not inclined to believe the belting system necessary as direct connected motors bolted to the machines as shown in the accompanying illustrations, have worked well.

8—What are the applications of motors in brick yards?

Electrically Driven Plant of the Puritan Brick Co., Hamden, O.

The chief item of saving in an electrically equipped brick plant is in the multiplicity of ways in which the motor can be used. I have already described the equipment of the Salt Lake Press Brick Co.'s plant, but the electric motor can be used in addition to those enumerated. "Overtime" in any section entails power charges proportionate only to the machines in actual service. Often, especially in brick plants, the points of application of power are widely separated necessitating makeshift methods or the installation of wasteful and inefficient non-condensing steam engines. Excavating shovels and drainage pumps at the clay pits, ventilating fans, in the dry house, and the brick machines, proper, invariably require separate sources of power unless a centralized system of electrical distribution is employed. If the plant is large enough to have its own generating equipment, the power house can be located at any convenient point where fuel can be obtained easily and at small expense. Additional motor driven units can then be installed from time to time and the capacity of the plant increased without reference to existing line shafts and bolting problems. Motors can be used for operating drills, flexible carriers, blowers for forced draft in kilns, hoists for loading brick in cage units, etc.

8—What are the limitations of motors, if any?

One manufacturer told me that the reason he has not installed electrical power was that he did not believe a motor could be made proof against the dirt and dust of a brick plant. I took this matter up to Mr. C. C. Batchelder, of the Engineering Department of the General Electric Co. and asked him whether this complaint was general. He said that the dust and dirt conditions in a cement mill were a hundred per cent worse than they ever could be in a brick plant, yet they successfully use electric motors, direct connected to powerful grinders and crushers without difficulty. He said that this is the first time he ever heard of the objection and that his companies have motors to more than meet the requirements of brick yards in that respect. He said the fact that motors could be made dust-proof made electrical maintenance charges so low on brick yards.

9—Is not the wear and tear on a direct geared motor driven mill harmful to the machine?

In replacing the steam engine with motor drive in the Bibb Brick Co., of Macon, Ga., the likelihood of delays due to breaking belts and unavoidable slip involving loss of power, speed and lessened production, was clearly recognized, consequently a direct geared drive was decided upon. This company has two No. 8 Chambers Bros. auger brick machines with a normal capacity of 100,000 brick each, when driven at 250 revolutions per minute. For each of these machines, the builders recommended a 100 h. p. continuous duty motor. It was found, however, that the clay pits contained strata bearing considerable sand and that when using clay from that particular source the augers had to be operated at a lower speed, otherwise the velocity of the issuing clay column was too great for satisfactory results; this fact determined the selection of a variable speed motor capable of operating continuously at 80 per cent of its normal speed.

This question is best answered by the statement that if care is taken in selecting the proper motor for the contingencies which the machine itself must meet, there will be no more wear and tear on a machine by direct geared drive than by belting or friction clutch.

10—Can I get greater power control from electricity?

Yes. The accompanying charts show how vital it is to have perfect and instantaneous control of speed in brick making plants. Factors such as the necessity of frequent starting under full load conditions, the excessive torque required when the cutting knives and shaft of the auger become entangled with roots, and the desirability at times, of reversing the mills for short periods, require a type of motor that permits of easy and positive speed control. This is not possible in a shaft or belt driven machine. The actual load, by test, varies from 125 to 150-h. p., depending largely upon the degree of moisture in the clay. The conservative temperature rating of the motor is forcibly indicated by the fact that after a ten hours run under continuous load ranging from 140-h. p. to 150-h. p. the temperature rise at the hottest part of the motor was but 35 deg. C.

The chart taken from a graphic recording watt meter shows the actual variation of the combined load of the two 100-h. p. motors when driving two No. 8 augers. A clay granulator capable of supplying approximately 25 per cent more material than is nominally required, feeds these brick machines. The considerations affecting the choice of motors for these granulators were very similar to those outlined in answers to previous questions; namely: high torque, frequent starting, together with long periods of heavy continuous duty and occasional necessity for reversal. An induction motor, taking 500 volts, with a starting torque equivalent to approximately three times normal full load torque, was chosen.

Baldwin-Westinghouse Industrial Locomotive Hauling Clay from Pit to Plant.

In addition to the above mentioned motor driven brick machinery a centrifugal pump is installed at the clay pits to dispose of the seepage. This pump is direct connected to a type of 1-12-25-h. p.—600 R. P. M., Form K., 550 volt induction motor and has a normal capacity of 1,000 gallons per minute.

It will be seen that the motor has a place in a brick plant, that it is feasible even under the most trying circumstances and that when ever a manufacturer desires to reduce some of his operating expenses and at the same time keep up his quality and rate of output the electrical engineer will be his best friend in a time of need.

Brick Famine in Detroit.

A shortage of brick, which has assumed practically the proportions of a famine, in and about Detroit, was the result of the severe winter and late spring, causing delay in building operations. Many of the plants depend upon the sun to dry their products and the cold rainy weather has seriously delayed manufacturing. The large plants which produce brick the year around have drained their supplies to meet the demands of their regular customers. Contractors claim they cannot get brick.

ELECTRIC DRIVE IN WYOMING.

Convenience and Economy in Operation Afforded by Electric Power—Dies Heated by Electricity.

Electrical equipment for brick plants is gaining in favor throughout the country and in the far west, in Cheyenne, Wyo., has been installed in the plant of the Cheyenne Brick Co. The electrical equipment at this plant consists of one 50-h. p. G. E. motor, which drives a dry pan, conveyor, mixer and elevator. The motor is belted to line shafting which conveys the power to the various machines by means of belts. A 10-h. p. G. E. motor drives a 4-mold Berg press. The dies on the press are heated by means of G. E. flat iron cartridge heaters, which Mr. Irving Dunn, the manager, says have proven very satisfactory, as this method eliminates all the objectionable features of steam heat and the danger of freezing die blocks. Mr. Dunn states that they have found electric power far cheaper and much more convenient than steam power, as it is always ready for use when needed and in case of a break-down, the power can be cut off.

A continuous kiln with 16 chambers, each chamber holding 20,000 brick, is used at this plant. Southern Colorado slack coal is used for burning and the quality of brick produced is very satisfactory. The output is about 40 per cent face brick and the balance, common brick with less than one per cent waste. The kiln is very simple in construction, being composed of two arches 106 ft. long by 17 ft. wide, one arch built against the other with a cross over the opening at each end, to allow the heat to travel from one tunnel to the other. All firing is done from the top and one man on each shift does all the firing.

Relative Cost of Electricity and Steam.

An inquiry as to electrical drive for clay manufacture, as compared to steam and an old-fashioned engine, the exhaust steam being utilized for drying purposes, was answered in an English pottery and brick journal, as follows:

> The question of the relative cost of electricity and steam, is a very difficult one, and depends on many factors not obtainable without a close acquaintance with your works. Briefly, you may regard the cost of the steam as entirely chargeable to your drying sheds and that you get your power for nothing. In this case your engine—no matter how old-fashioned—will be cheaper than electricity because it costs you just nothing. On the other hand, you may be able to find a better means of heating your drying sheds—as with the use of waste heat from your kiln or with fires—so that you do not need the steam and then you may find that electricity is cheaper than your present method. Much depends on the arrangement of the plant and the number of motors, also whether you must have nearly all the plant going at once, or whether you can have the grinding mill working more rapidly than the making machinery and therefore for a shorter time.
>
> The whole matter is one requiring the services of an engineer skilled in this class of work, who will go into the matter in association with the engineer of the corporation supplying the electricity.

Southern Agency Established.

The Bonnot company has established an agency in Chattanooga, Tenn., for the sale of its line of machinery in the south. The services of W. Crow have been secured and he will be in charge of southern territory. Mr. Crow is not only an experienced machinery salesman but also has had considerable experience in the manufacture of clay products so that he is thoroughly familiar with the best method of handling various clays.

BIG ROAD MEETING PLANNED.

Harvest of Orders Reaped by Paving Brick Manufacturers as Result of Good Roads Movement.

The "Good Roads Improvement Bug" has been leaving its sting in almost every nook and corner of the country during the last few years, with the result that paving brick and paving block manufacturers have been reaping a harvest of orders.

So important has the good roads movement become that the Department of Agriculture at Washington has taken the matter up in concrete form.

An interesting exhibit at the American Road Congress, to be held next fall, will be presented by the United States Department of Agriculture, and Secretary Wilson, of the Department, has authorized Director Logan Waller Page, of the Office of Public Roads, to give a complete exhibit of the Government's work on the public roads of the country, showing how unimproved roads hurt the farmer and how improved roads aid not only the farmer but the consumer.

Four of the biggest associations which are working for the improvment of public roads are consolidating their forces in order to make the next American Road Congress the biggest affair of its kind in the history of this country; they are, The American Road Builders' Association, The American Association for Highway Improvement, the American Automobile Association, and the National Association of Road Material and Machinery Manufacturers. All of these associations have previously held separate conventions. It is expected that farmers' associations and other associations interested in the improvement of public highways will likewise take part in the Congress.

The National Paving Brick Manufacturers' Association will have an extensive display which will, without doubt, do more toward winning converts to the improved highway than would be possible by any other means. Farmers throughout the country have come to realize that a roadway paved with brick is a permanent roadway, which adds greatly to the valuation of all farm property bordering on it.

A canvass of the various paving brick and paving block plants in Ohio, Western Pennsylvania, Maryland and West Virginia shows that not an idle plant exists, and that in the office of each corporation, the order file contains enough business to keep these plants in operation for many months to come.

But, the work of converting the skeptic to brick for highway improvement continues apace. Almost every day, one can pick up the daily press and read of a "good roads meeting" being held at this and that county seat, and the people attending these meetings have been those largely interested in the development of rich farming territories.

In McKean county, Pa., of which Bradford is the county seat, a good roads meeting was held June 7, which was the largest attended meeting of the character ever held in the state. This was known as the Good Roads Convention of McKean county, and the following salient resolution was passed which is of great importance to every paving brick manufacturer in the United States:

"Whereas, the public funds may be conserved by putting down roads, of a permanent character, and,

"Whereas, when the road improvements are made they shall be constructed in the most approved manner and,

"Whereas, the people of McKean county are to be congratulated upon the fact that their locality produces the best known wearing material for road surfacing in the form of vitrified brick which to the largest extent eliminates, even on the most excessively used highways the incessant burden of repairs common with other road materials. It is therefore,

"Resolved, that in the improvement of our excessively used highways vitrified brick be used as the surfacing material in the interest of economy, lack of maintenance charges and the general satisfaction which will result."

C. P. Mayer, of the C. P. Mayer Brick Co., of Pittsburgh and Bridgeville, Pa., was one of the first speakers at this meeting. C. E. and G. W. Foster, of the Pearl Clay Products Co., of Bradford, who are well known to all National Association members, also took a leading part in this great gathering.

Secretary Will P. Blair, of the N. P. B. M. A., and his assistant, H. H. MacDonald, were in attendance at the convention and displayed moving pictures showing good roads—roads that had been improved with vitrified brick.

The McKean county organization is now backing all road improvements in that part of Western Pennsylvania, and it will result in orders being placed for millions of pavers ere long.

BIG PAVING CONTRACTS LET.

Throughout the country come reports of many bids to be let for paving, and brick is being used in many cases. We note that 7,000 yards of brick pavement will be constructed at Elizabeth, N. J.; New Philadelphia, O. will construct a brick street; Hannibal, Mo. will lay 36,000 yards of brick pavement; a brick paved road will be laid at Uhrichsville, O.; 20,000 yards of brick pavement will be laid at Decatur, Ill.; 13,000 yards of brick pavement will be laid at Odell, Ill.; four brick streets will be built at Lakewood, O.; Peekskill, N. Y. will construct 10,000 yards of brick and asphalt block pavement; Portsmouth, Va. will lay some vitrified brick pavement as will also Washington, Pa.; Wauseon, O., McPherson, Kans., Cambridge, O., Pittsburgh, Kans., Janesville, Wis., Pikesville, Ky. and Huntington, Ind. will pave eight streets and alleys with vitrified brick. The board of local improvements at Pekin, Ill. have granted contracts for vitrified brick pavement amounting to $31,918. Rochelle, Ill. will pave 32,000 sq. yds. with brick at a cost of $77,197. Tallahassee, Fla. has let a contract to the Southern Pacific Construction Co. for 22,000 sq. yds. of brick paving on sand filler at $1.96 per sq. yd. Philadelphia has let contracts for paving 3,000 sq. yds. with vitrified brick at $2.00 per sq. yd. Lockport, N. Y. will pave Locust street with asphalt and brick at a cost of $51,525. Tyler, Tex. will pave North Broadway with brick at a cost of $2.25 per sq. yd., totaling about $21,000.

TESTS OF PAVING BRICK.

The Engineering Experiment Station of Iowa State College has made several series of tests of paving brick in both old type and new type rattlers, to determine the effect of the change of type. One series has been tabulated, and we give the averages below, through the courtesy of A. O. Anderson, of the Experiment Station. In each of these tests ten bricks or blocks were used as a charge, with the shot specified for each type. Using the 1901 rattler, No. 1 blocks averaged 20.34% loss, and 22.90% with the 1911 rattler; while No. 2 blocks gave 22.28% and 26.63%, respectively. Of brick tested in the same rattler, No. 1 gave 18.70% in the old and 25.09% in the new, and No. 2 averaged 24.91% and 29.50%, respectively.

The old type shot were then placed in the new rattler and the new type in the old rattler, under which conditions No. 1 block showed a loss of 17.53% in the old and 18.26% in the new, and No. 1 brick 20.02% and 22.52%, respectively. These show No. 1 brick as losing 6.39% more with new rattler and new shot than with the old, and 2.50% more with new rattler and old shot. Considering all tests, the new form of shot appeared to contribute about one-third to the added severity of the test, and the new form of rattler about two-thirds. During the tests the old rattler was on a solid concrete foundation, the new one on a temporary foundation of timber skids.

FARMERS FAVOR BRICK ROADWAYS.

Former Opponents Now Favor Brick Roads.

Brick paving for country highways has long since passed the experimental stage, and where farmers formerly opposed the use of brick, on account of the original cost, the saving in maintenance charges has proven the economy of this style of paving, and farmers using brick roads are loud in their praise. In this connection, the following article, which appeared in a recent issue of the "Danville (Ill.) Commercial News," will be of interest:

"Although there are many roads fully as good as the brick highway in Newman, Ill., that stretch of improved road appears to be the most popular piece of pavement in the state, and large crowds are constantly going to that place for the purpose of inspection. There, however, is a mighty fine stretch of paved highway in Grant township that is probably just as good as the Newman stretch.

"The Newman pavement extends four miles from the town. It ends at a cross road, three roads thus converging into the one main road into town. This pavement has been down two years, and, contrary to expectation, there was very litle mud carried onto it, from the dirt roads. A committee from Bloomington recently visited the road and were pleased. They reported that they found the mud during two years had been carried from the three converging roads to a distance of about half a block up on the pavement. Beyond that the pavement was cleaner than most of the city street pavements, the narrow width enabling the rains to wash all the dirt from the surface.

"The highway commissioners stated that they had not spent a cent on the pavement since it was laid. This spring, the accumulated mud of two years will be removed. This will be done by a farmer who wants the dirt to fill around his house. He expects to move the entire accumulation in half a day.

"The entire committee of nine drove over the road in one automobile, and, despite the sleet, found the road smooth and firm.

"One farmer stated that a short time ago it was necessary to hitch six horses to a load of corn to haul it to the road, but that once on the road, he took six loads to town with one team. A photograph was taken of the outfit and can be seen at the city engineer's office.

"Inquiry among the farmers along the paved road brought out the fact that the men who fought the proposition hardest, are now the ones who are at the head of a movement to build several more miles of the road. They stated that every farmer who drove over the road became an advocate of the movement for brick country roads.

"Owners of automobiles especially are ardent supporters of the brick pavement proposition. They are benefited in summer as well as in winter, the absence of dust on the pavement making motoring a real pleasure. Newman auto owners state that the road pavement is the one place in the country where one auto can follow another without the occupants being covered with dust.

Nine Feet Sufficient Width.

"One thing that surprised the committee was the answer which the Douglas county farmers made to the question, which they state will be the one most asked of the Mattoon advocates in regard to the width of the pavement. Most persons unacquainted with country pavements would naturally think that nine feet was much too narrow. Those who have traveled over the Newman roads every day, however, state that it would be a big mistake to build a wider pavement.

"A nine-foot pavement can be built at one side of the center of the roadway, as was done at Newman, thus allowing a dirt track to the side. As this dirt track is never traveled when the roads are the least bit muddy it approaches a perfect dirt road. The narrow pavement also is kept cleaner by the rain than a broader pavement would be.

"It is true that one wheel of each vehicle must be off the pavement when two vehicles meet, but two vehicles get off the pavement at the same spot so rarely that the dirt is always packed and no trouble is met with. There has never been an accident or a team stalled from getting off the pavement, even with a load.

"The pavement out of Newman is constructed of vitrified clay brick on a cement base. The cement base is extended into a six-inch curbing which holds the pavement rigid and prevents any damage to the pavement from pulling loads from the dirt track on to the pavement. The curbing after two years' wear is not broken or damaged in any place."

VITRIFIED PAVERS.

A brick highway from Greenwich, Conn., to Windsor Locks, Conn., is advocated. It is proposed to build the brick highway 40 feet wide and it is to have a branch from New Haven to New London.

Such a fine wide boulevard would be a great advantage to the State. Abandoned farms could be easily reclaimed —the hills will be sought by the pleasure seekers and the State will become richer and greater and a more fit abiding place for men. It is estimated that the road could be finished within five years.

At a meeting of the property owners on Vermont Street east of Eighth and west of Eighteenth, Quincy, Ill., it was decided by a vote of 17 to 10 to pave Vermont Street with brick. Considerable discussion has occurred over this matter and we are pleased that the property owners decided in favor of brick.

SUBIRRIGATION.

The question of subirrigation, subaeration and subdrainage has been given considerable attention by experts during the past few years and has been pronounced the most scientific method now in use for applying water to plant growth. In Florida, where formerly the fields were watered by a system of trenches between the rows of plants, the plants were scorched and the crops ruined by use of the surface system. One of our Florida subscribers has been investigating the question of subirrigation, and has sent us the following description of the system in use at Sanford, Fla., which without doubt will be of interest to our drain tile manufacturers:

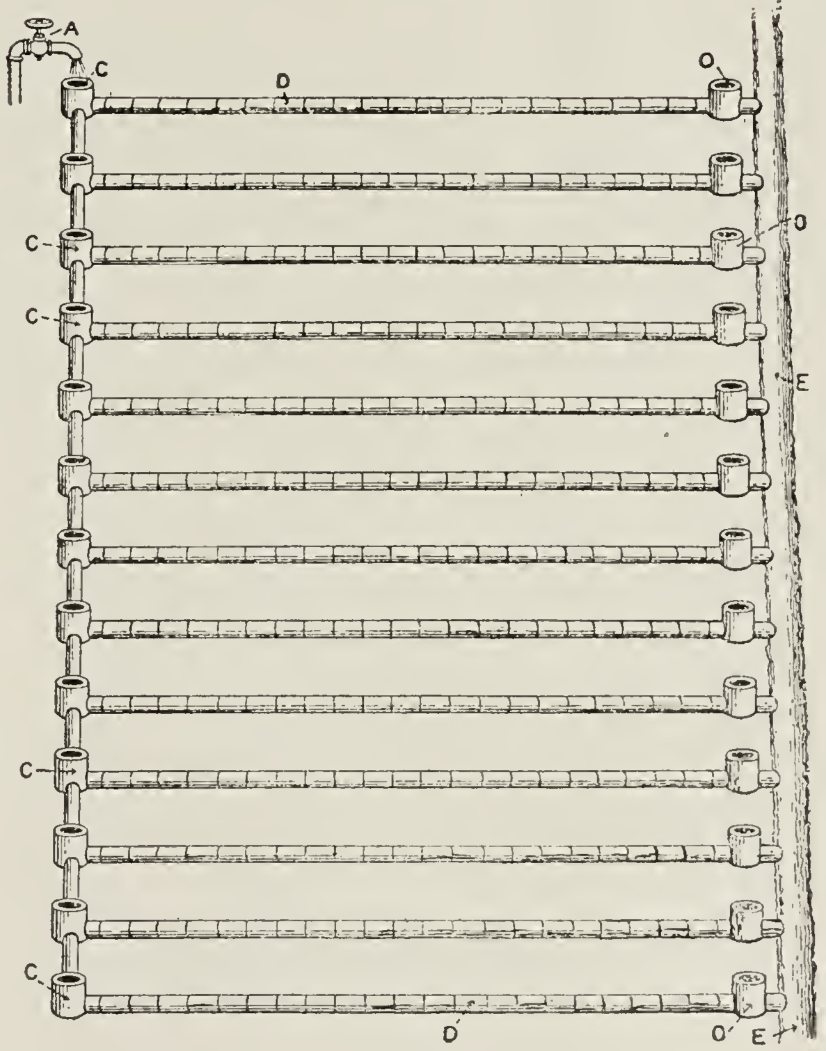
The accompanying diagram shows how the Sanford system is laid in the field. A is at the flowing well which discharges into an 18-inch tile. C is the standpipes along the supply main, the latter being made of 4-inch tile. By plugging the hole in standpipe any single line of tile can be shut off from the water and any other line of tile can be supplied at will. This allows the planter to apply the water to the exact portion of the field he wants it in without wetting portions that do not need moisture. D is the rows of 3-inch tile through the joints of which the water seeps and wets the field from the bottom or subsoil up. The joints are covered with sawdust, paper or fibre to keep the sand and dirt from working into the lines of tile. O is the controlling box. It has a partition in the center with a hole through the lower side where the tile is connected to it, another hole in the partition 12 inches above the first hole and a V shape split in the top of the partition. E is the ditch at the side of the road which carries off the surplus water.

The system is installed by laying rows of tile D 18 inches beneath the surface, 20 to 35 feet apart, running the short way of the field, there being a fall of about 4 inches in 330 feet, which is sufficient to allow the water to trickle through without loss by friction. These rows of tile are connected water tight at the 4-inch feed main, which is in turn connected with the stand pipes. The open ditch E is on the lower side of the field and receives the surplus water from the lines D. Two feet back from the ditch is the controlling box O, which is used to dam the water back in the field. This box has three outlets, one on a level with tile D, which when open permits all excessive rainfall to drain into ditch E. The next higher outlet is 12 inches above the first, and when the first outlet is plugged permits a level of 12 inches of water in the field above the surface. When the first and second outlets are closed the water will then back up in the field to within 2 inches of the surface. By opening and closing the outlets in the partition of the controlling box the quantity of water applied to the plants can be measured with a nicety.

During periods of rain the well is shut off, the lines of tile D are left open, thus draining all surplus water out of the field at once. We can cultivate our fields within two hours after the hardest rains. The controlling box is made of cement, being 22 inches high, 12 inches wide and 6 inches thick, with a cement partition in the center. Cement bottoms are made in the intake pipes C and the direct connection with the intake pipes, controlling boxes and feed mains are made water tight. Iron nipples of various sizes are used in making these connections. The holes in the controlling boxes are also fitted with iron pipe linings.

The following is a list of materials needed for tiling one acre:

2,000	3-inch drain tile 12 inches long, $22	$44.00
7	8-inch stand pipes, 2½ feet long	2.45
1	18-inch intake pocket at well 2½ feet long	1.50
7	22-inch controlling boxes	5.25
24	2x5-inch iron nipples	1.68
2	sacks cement	1.10
100	ft. 4x24-inch terra cotta main	7.00
1	load of fibre or sawdust	1.50
	Wooden plugs	.50
	Total cost of materials for one acre	$63.97



Drawing Showing System of Subirrigation and Subdrainage. A—Stopcock on Pipe from Artesian Well. C—Standpipes Controlling Inflow of Water. D—Rows of Tile Across Field. E—Drain Channel. O—Governing Pocket to Dam the Water.

The labor necessary to install the system on one acre will cost about $40, making the total cost about $105 per acre. An artesian well will cost from $50 to $75, and so far as we know will flow forever. We have wells here that have been flowing for the past thirty-three years. There are now 2,800 wells in Sanford celery delta, not all of which are used for irrigation purposes, however. No perceptible decrease in the strength of these wells has so far manifested itself.

There must be a subsoil of clay or hard-pan at from 2 to 4 feet beneath the surface before this system is available. If the subsoil, is, say, 3 feet below the surface and the system is installed and the water turned on, no moisture will begin to come to the surface until the 18 inches of earth between the lower side of the tile and subsoil has become wholly saturated with water. When this is done the moisture is then drawn to the surface by capillary attraction.

The water being applied at the roots of the plants acts as a sort of vaccination against all root diseases, and as an evidence of this fact we have grown the same crops on the same acres for ten years, the acres becoming more productive each year. Few or no surface pests are encountered when this system is used, as the fields can be flooded at any time desired, thus drowning them out. The system is not a success where there is no subsoil.

The item of good drainage is just as essential as an inexhaustible supply of water, the system of tile acting for this purpose, when there is an excessive rainfall. Air is also necessary to the life of healthy plants, and our system of irrigation assists us in applying air at the very roots of the plants. This subaeration also is a protection of considerable importance in time of cold. The frost line, which those who are unacquainted with conditions in Florida talk about so glibly, can be found four inches under the sod in any part of the state. It does not show on the surface, as freezes have occurred in the southern part of Cuba and all over Florida.

To prepare an acre of land for growing vegetables by installing an irrigation system which costs $105 may seem a foolish waste of money, but the productivity of that irrigated acre when in good tilth and fructifying properly is so many times more than it would be otherwise that the owner is fully justified in going to the expense. For instance, such an acre here has produced seventy tons of vegetables in a single growing season of nine months which sold for $4,064, paying the railroad $735 to haul them to market. A fairly good acre? One of our growers last spring marketed $32,000 worth of lettuce and cucumbers off of 22 acres. One thousand, $2,000 or $3,000 is not an unusual output for a single acre.

ADVERTISES IN RHYME.

The following advertisement has been used by an enterprising tile manufacturer in a poultry catalog:

TILE—ALL SIZES.

Brick and Hollow Building Blocks.

As sure as the smoke curls out of our stack,
So sure are the farmers receiving back
Wagons of grain as to bushels before—
Say nothing of pumpkins and melons galore;
Big King corn, potatoes and barley and wheat,
Rye, timothy, clover—the big sugar beet,
Hard grain of all kinds that will grind into chop,
Field corn, sweet corn and corn that will pop;
It's easily accomplished regardless of rain,
For the farm is well tiled and crops grow the same.

Next we turn to the wife, who has garden to keep,
Works like a trooper while baby's asleep;
There she toils and she plants without even a frown,
Knowing full value of tile in the ground.
As the season advances she peeps down the rows,
Sees turnips, radishes, onions and sweet potatoes;
While beets, carrots, egg-plant and lettuce all grow,
Parsley, spinach, cucumbers and cabbage just so;
Beans, rutabagas, cauliflower and sage,
Green peas and tomatoes—"Say, tile's all the rage."

We'll give poultry credit for all they produce—
The turkey, the chicken, the guinea, the goose;
We'll sell off the mongrels, take in the big show,
Talk "poultrydom" thorough with people who know;
Invest in a pair, a trio or pen,
We'll be fully repaid and satisfied then
Pure breeds lay far better, we feel sure they will,
And will make us more money than the common dung-hill;
Now, we've talked of the farm and things confidential,
But above all things, remember, Blank's Tile most Essential.

The following appeared in the "British Clayworker": "In a recent report to the Society of Chemical Industry, Mr. Charles Potter claims to have discovered that sulphate of magnesia is the most active force in the destruction of cement by salt water. The lime and clay slightly combined in the cement are decomposed and form sulphate of lime and clay, which, absorbing the water for crystalization, causes the expansion of the cement."

The report of the city engineer of St. Paul shows that there are 305 miles of sewers, in the city of which 27.63 miles are of sandrock, 33.57 of brick and stone, 7.42 of concrete, and 236.40 miles of pipe sewers.

DRAIN TILE INQUIRY.

Farmers throughout the country are becoming more and more interested in the farm drainage and we frequently receive inquiries in regard to the cost and methods of laying same, of which the following is a fair example. The answer was given by a well-known authority on drain tile matters:

Editor, "Brick and Clay Record":—I would like reliable information as to the cost of tiling 120 acres of second bottom land ¾ mile long and ¼ mile wide, having a natural fall the entire length of the land, and a good outlet. The ditching will be practically the same all over the land. Most of this land is second bottom land and 40 acres of it are sometimes overflowed. About one-half of the land is being farmed each year, but in wet years the crops are very poor. I would like complete directions for tiling this land if possible. Would you recommend cement, tile or clay?

Answer.—It is of course an easy matter to advise the gentleman in regard to whether it is better to use cement or clay tile. In this locality (Iowa) we can prove to him positively that clay tile is better than the best cement tile and that he can always tell the quality of a clay tile by its appearance, hardness and freedom from large quantities of lime, while no one can tell by the appearance of a cement tile whether it is good or not. In fact, we have no definite knowledge of there being any good ones.

In regard to the cost of tiling the piece of ground mentioned, it would of course be out of the question to give such information with the data at hand. In this district, and under prevailing prices it would be tiled pretty thoroughly for $15.00 per acre.

I would always advise any land owner to get the services of a competent drainage engineer to lay out the work of draining any piece of land such as that described, as the cost will not be much and will result, beyond doubt, in a saving over the cost of the survey in proper work and proper quantities of same.

I would say that the gentleman might get really poor advice from even a neighboring farmer whose tiling work may have paid him well, although it was put in with no advice other than that furnished by the ditcher.

Tiling is a sure thing—a big profit paying investment, and should be done properly and the results will always be more than satisfactory.

Tile Notes.

Mr. Otis Kisor, manager of the Forest Grove Brick & Tile Co., Forest Grove, Ore., states that last fall he put in a drain tile die, to experiment with his clay and found it would make an excellent quality of tile and there is such a demand among the farmers for tile, that he has been unable to supply it. Mr. Kisor is planning to build a new up-to-date tile plant on the United railway about seven miles north of Forest Grove.

The Belle Plaine (Ia.) Brick & Tile Co., we are told, is shipping an average of four car loads of tile per day and has recently installed a steam shovel which takes the place of 20 shovelers, and as soon as the weather permits six additional kilns will be built, making 14 kilns in all.

Swamped With Orders.

J. P. Anspach & Son of Edgarton, Ind., are just beginning to get their heads above water, as they have been swamped with orders all spring and it is expected that the recent rains will result in more orders. They have been running steady all spring and are changing their system of burning. They have been using cheap fuel this spring in the shape of corn cobs.

Brownell Co. Opens Pittsburgh Office.

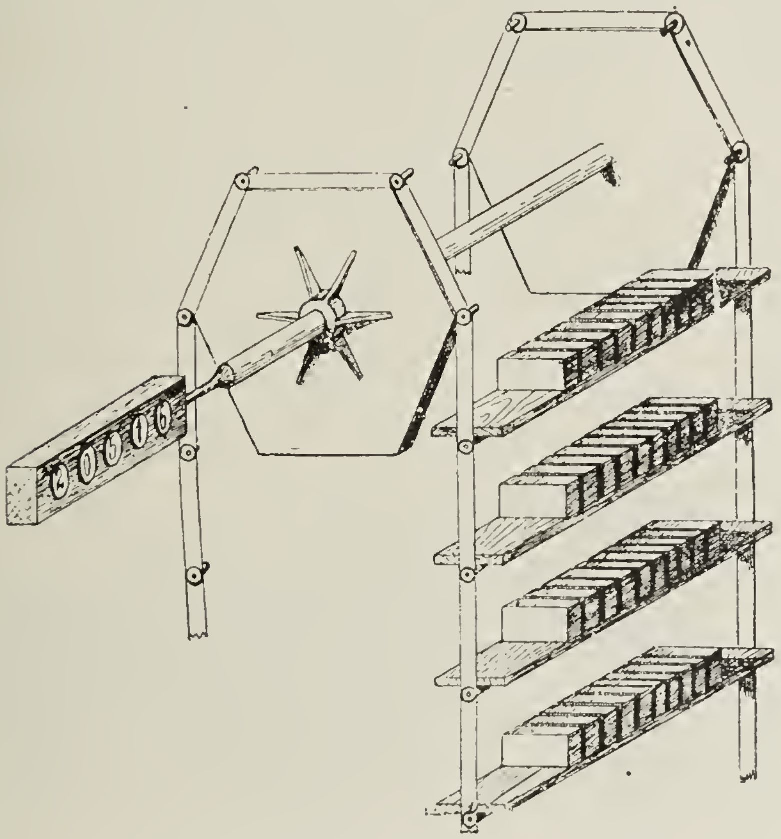
The Brownell Co. of Dayton, Ohio, manufacturers of high-grade engines, boilers, feed water heaters, tanks, etc., will open a district office, July 1, in Room 1418 Oliver Building, Pittsburgh, Pa., which will be in charge of Mr. B. S. Rederer.

AUTOMATIC BRICK ELEVATOR AND REGISTER.

Novel Machine Which Lifts and Counts the Brick at Same Time.

It is necessary, when piece work is applied in a brick plant, that the number of pieces made be exactly known. There is employed for that purpose various ways of counting, which are generally adapted to the presses themselves. The count of the brick may depend upon the number of revolutions of special cylinders or on the movement of the cutting pallets.

A new method for counting, shown in the illustration, is absolutely independent of the press and differs in that manner from other registering machines now in operation. As perfect as it may be, it does not suit all conditions and is not practicable except where the brick are moved from one elevator to another, and it is a combination of elevator and register. This machine is composed of two endless chains, set vertically, which carry the brick pallets. The chains revolve on hexagon sprockets and operate in the same manner as an ordinary elevator. At the end of the sprocket shaft is placed a register which registers the number of revolutions. The number of revolutions made determines the number of brick, for example and each complete revolution of the sprocket indicates that 15x6 or 90 brick have been carried.


Sketch Showing New Elevator and Register.

As the movement of the machine is slow, it is of certain practical value and the results obtained are as exact as can be secured by any ordinary register (provided that there are no errors in the number of brick placed on the pallets by the workmen at the press), and furthermore, it prevents poor handling of the brick.—Translated from "Revue Generale de Ceramique."

Chicago sneers at Mobile's barges made of cement. It asks the nation to remember that during the Columbian Exposition it had a battleship built of brick.

SCUMMED BRICK AGAIN.

In connection with the discussion relative to causes and cures for "scum" on brick, the following, which appeared in the "British Clay-Worker," will be of interest, we are sure:

"Venice has had for the moment to cease rebuilding its famous Campanile, owing to the extent to which the brick used are disfigured by efflorescence. Generally speaking, efflorescence is made up of sulphates and carbonates, with salts of other acids carried to the surface of the brick by evaporation of the water which has entered into them. In this particular case, the first chemical analysis shows a quantity of alkaline sulphates likely to cause gradual decomposition of the brick, no more of which will in any event be accepted from Treviso. Of course, scum is an old enemy of the architect and the clayworker alike, and the number of efforts to defeat it is legion. At the moment of writing we have received particulars of a French patent for the cleaning of dirty brick by means of a sand blast. The invention is said to be especially applicable to scummed goods.

"The use of a sand-blast for this purpose is interesting, but we question whether it would not be too costly for most of our readers who are troubled with the scum difficulty, but we give it here for what it is worth, and would suggest that the use of a colored sand would probably give a more satisfactory result with red brick, provided it could be obtained sufficiently sharp.

"A German patent for applying a suitable mixture automatically has given satisfaction abroad, and would not cost more than six pence per M., the theory of the method as of the use of starch, paste, or tar, is to allow the brick so to dry that the scum, if it rises to the surface, will either reach the unseen parts of the brick, when in use, or fall off when the covering material burns off in the kiln. Again, soluble salts may be changed into insoluble salts by the introduction of some precipitating agent, such as barium. Efflorescence formed in the kiln may be removed by alternating oxidizing with reducing conditions during the latter part of the burning. Other suggested cures are to use clay which has not been weathered; to weather the clay, and then wash out all soluble salts; to so burn the brick that they will absorb the minimum of water; and to make mortar joints as thin as possible, with mortar free from sulphur. However, without advocating one theory more than another, what architects want is a practicable method of mixing or burning that will render the product free from scum from start to finish."

BRICK CRACK IN BURNING.

One of our subscribers in South Carolina writes asking information as follows:

"In our territory we have lots of red clay, but it seems to burn a very poor brick. Can you tell me where I can get any information on the burning of this kind of clay? All our brick are made from a yellow clay which we find in the river bottoms. This red upland clay makes a good 'green brick' but cracks up in the burning."

The query was answered by Anton Vogt as follows:

The question from the South Carolina subscriber is a very interesting one, as it concerns not only the South Carolina brickmakers, but all those in southern states where up-land clay is used for making brick.

Most southern clays from the river bottoms make good green brick which do not check in burning, but all up-land clays in the south, where a growth of timber, such as pine, exists, will crack in burning. This has been my experience. By mixing the up-land and river-bottom clays one can overcome a good deal of the cracking, by taking more time for water smoking. Such clay cannot be burned in five or six days from start to finish, as is the usual custom in the South, owing to the imperfect drying in open yards. The brick look dry but they are only surface dried and are wet in the center. Proper drying prevents the brick from cracking while burning.

It is however, very difficult to suggest further remedies unless one can see the clay and experiment with it. Such clay needs the proper kind of kiln which in turn should be handled by an experienced burner, wide awake, not one who goes to sleep at night and lets the fire go down. Another cause for the cracks forming in burning brick may be lamination. The brick are formed of layers or seams of clay, not bonded or united together, and when the final shrinkage in burning takes place the brick crack.

The only remedy for this defect is to replace the auger with a plunger machine, which produces not so many, but better brick without lamination.

Cure for Limey Brick.

A writer in a German clay journal suggests that the cause of limey clays producing defective brick may be found in the kiln having too few chambers, or in the kiln being too short. He therefore recommends extending the distance to be traversed by the fire and hot gases, and for this purpose advises the conversion of the kiln from a purely horizontal one into one with a wave-like motion of the gases. The lower six courses of brick are set as usual and the remainder are set close so as to form a wall of the pattern indicated. This wall is built in alternate chambers, the intervening ones being provided with low walls. The result is that the gases are compelled to take a wave-like path, and the effect of a much longer kiln is obtained.

Brick Chimneys Straightened.

Two brick chimneys, erected in 1859 at the Louisville (Ky.) Water Co.'s pumping plant, leaned to the danger point during construction. Before completion, the chimneys which were 120 ft. high, set upon foundations erected in the aluvium on the bank of the Ohio river, began to settle and tilt out of their vertical position. After they were completed, trenches were dug on the side opposite from which they leaned. These trenches were 4 ft. wide and 21 ft. deep, extending half way around the base and were securely planked and shored. At the bottom of the trench holes 9 ins. by 18 ins. and 6 ft. deep were sunk 30 ins. apart. One of the chimneys began to settle and right itself before the pits were completed and in the course of 91 days, was only 3 ins. out of plumb as compared with 3 ft. when the work was begun. The pits were then filled and the chimney was plumb in two or three days. The second chimney required the use of battering rams to settle it into place, the same being used on the foundation six days a week for fourteen weeks. The chimney was plumb 213 days after work on the trenches started.—Eng. Record.

Encouraging Feature.

It is quite encouraging to note the general interest which is being aroused, in all parts of the country, in regard to the use of brick for country highways. This is reflected in the many items which are appearing in the local papers throughout the country, such as the following, clipped from a New Jersey newspaper:

In many parts of Ohio and Illinois the country roads are being paved with brick, some of them to the full width of the roadway, others half of the width, leaving dirt roads for good weather.

Brick paving, it is claimed, lasts longer than any other that can be provided for the same money. The roads are graded and rolled and have a concrete base on which the brick are laid. The brick are retained by concrete curbs, the inner curb being flush with the brick to allow vehicles to pass from the earth road to the brick. The roads are improved in this way for about $8,000 a mile, and the result is more durable than macadam.

Big Plant to Be Built at Denver.

The Rankin Brick & Clay Company, which was organized about a year ago, will within a few weeks begin the construction of its $250,000 plant, which will employ over 100,000 men. Forty acres of land, underlaid with approximately 25,000,000 tons of shade, have been purchased by the company about two miles above Marshall, near Denver. The clay, which has been examined by experts, is said to make as good a brick as can be found in the country. The plant will have a capacity of 70,000 paving brick and 130,000 common brick per day. The officers are H. S. Rankin, president; F. A. Chaney, vice-president and treasurer, and L. B. Canon, secretary.

Concrete Viaduct Collapses.

The accompanying illustration shows a section of the concrete viaduct on the Kings Highway, St. Louis, Mo., which collapsed Sunday, June 16th. The accident occurred directly in front of the plants of the St. Louis branch of the Hydraulic-Press Brick Company and we doubt not that the occurrence will be in the nature of a boost for brick, which the Hydraulic Company will not be slow to take advantage of.

A Section of the Recently Collapsed Concrete Viaduct on Kings Highway.

Concrete Wall Lets Water Through.

In a recent communication, John Sehy, manufacturer of building brick and drain tile, Ashland, Ill., informs us that a portion of a basement wall of a store building at Ashland (Ill.), which was constructed of concrete blocks about five years ago, lets the water through so badly that the occupants have to keep dish-pans under the windows to catch the water. This portion of the wall will be removed and replaced with brick. It is interesting to note that the remainder of the walls, which are constructed of brick, do not let the water through, and are highly satisfactory to the owner of the building.

A course in electrical engineering may now be taken at the University of Illinois.

IMPORTANT LEGAL DECISIONS.

Court Rulings that Bear on Clay Industry and Affect the Maker and Dealer.

Rights Under Contract for Brick—In an action to recover a balance due upon a quantity of brick, the defendant contended that it was a sale by sample, and that in such cases "there is an implied warranty that the bulk of the goods shall correspond in kind and quantity with the sample exhibited." The evidence, however, was that, while the plaintiff knew that the brick were purchased for use in a Federal building, and forwarded samples, it expressly advised the defendant that the five samples were to be considered as a whole; that if it were required to furnish brick equal to the best sample, it could not fill the order; that it had ten and possibly fifteen thousand brick of the best sample furnished, and that "the dust had blown into the pile some and that all were soiled more or less." It further advised the defendant as follows: "Our reason for sending duplicates of the samples to you was to make sure that you fully understand what we can do, and to enable you to explain to the supervising architect, if you think it is worth while. Otherwise, we will be pleased to have the contractors look elsewhere for the brick."

After the receipt of this information the defendant advised the plaintiff to ship, and to "mix" the several kinds in the first car. It further advised it that: "The superintendent says that you are to ship this 18 R 2 of which you claim to have about 10,000, and then 18 R 5 and 18 R 3 are satisfactory to him and he will accept them." 18 R 2 was the best of the samples. It was contended that about 7,000 brick were rejected. Of that number the defendant sold about 4,000 and appropriated the proceeds. It claimed to have the remainder in store, and insisted upon the right to rescind the sale as to them and to hold the plaintiff responsible for cartage and storage.

If the court should concede that there was a breach of warranty, the rule is that a failure to give notice, or to offer to return the property within a reasonable time after discovering the defects, operates as a waiver of the right to rescind, and leaves the purchaser only the right to recover or offset damages to the extent of the diminished value of the article. Sixteen months after the date of the last shipment the defendant advised the plaintiff that 3,484 brick of the third shipment had been rejected by the contractors. This was the first advice of the quantity rejected. Nearly two months later the defendant wired the plaintiff: "Number of brick condemned. Not according to four samples accepted. Poor quality, badly discolored," etc. On the same date it advised by letter to the same effect. But there was never an offer to rescind the contract, or to hold the rejected brick subject to the plaintiff's order, nor any definite information to it as to the number rejected, until about two years more. Under such circumstances, the Supreme Court of Washington says, Dickinson Fire & Pressed Brick Co. vs. F. T. Crowe & Co., 115 Pacific Reporter, 1087, the defendant must rely upon its right to offset such damages as it had sustained.

The testimony of the defendant's witness, who was superintendent of the construction of the Federal building, made it clear that a part, if not all, the condemned brick were rejected because they did not conform to the best of the five samples. A foreman for the contractors testified that the expense of "re-sorting and gaging" was about $300, and that the greatest expense was in cleaning the brick. One of the contractors testified that some of the brick first shipped were dirty and seemed to have been on hand for a long time; that the next shipment varied in size and color, and that the damage consisted of the expense of the extra labor in sorting "and labor on the brick." A witness for the plaintiff testified that a year after the date of the last shipment, one of the contractors told him that the added expense of sorting and laying the brick would not exceed $100. This statement was not denied by the contractor. The defendant knew that the five samples varied in quality; that "dirt" had blown into the brick, and that "all" were "soiled more or less." There was no definite testimony in the record as to how the brick shipped differed in color and size from what would be reasonably anticipated from a mixture of the several samples. The court thinks that, upon the entire record, the amount allowed as a set-off, namely, $15 per thousand on 7,000 brick, and $100 for cleaning and sorting the brick.

It was finally argued that it was error to allow the plaintiff on the balance due it interest to the date of the entry of the judgment. But the court says that there was nothing in the record to indicate that the parties did not contemplate a cash sale. The purchase price was agreed upon prior to the date of the first shipment. Interest is allowable on a liability to pay money from the time the demand accrues, where the amount can be ascertained by computation. The existence of a set-off or counterclaim, which is unliquidated, will not prevent the recovery of interest on the balance of the demand found due from the date of its maturity.

Ready for Business.

The Worcester Sand-Lime Brick Co., of Worcester, Mass., which is erecting a brick-making factory on the old tannery property, West Auburn, is making progress on the remodelling of the old building. Under direction of Simon C. Rogers, M. E., of Dartmouth College, the new plant is being put in shape, and officials of the company expect operations to begin July 20.

Bright Prospects.

Tift Silica Brick & Stone Co, Tifton, Ga., under date of April 16, say: "We have sold the capacity of our plant since the first of the year, and are now nearly a half-million behind in filling orders—business is fine."

Washington Silicate Brick Co., in letter of April 9th, write: "Since the Spring has opened up the demand in the City of Washington is very large, with the result that the output of our works can be disposed of readily in the city."

Church Brick Co., Sibley, Mich., reports that in spite of the severe winter, the volume of business for the first three months of this year has been in excess of the correspending period of last year and promises a fine season.

PRODUCTS IN CLAY.

By J. Hampton Rich.

By frost nor fire nor whelming flood,
  With nothing weak alloyed;
Nor yet by time, with pulseless tread,
  Are Clay Products destroyed.

And ever yet in ages past
  Was this true slogan sung;
And in the days of heathen kings
  Their merits have been rung.

In Caesar's time—on Pagan throne,
  Clay Products were extolled;
On Sacred Page, with stylus bold,
  Their virtues were retold.

But now we, in this modern day,
How man himself comes but from clay;
  Clay is his rightful home.
  Would tell in printed tome

POTTERY NEWS

MANY CHANGES IN POTTERY WORLD.

Plants Running to Capacity—Summer Shut-Down Period Short.

Within the last few years seven or more potteries, all manufacturing a general line of ware, such as dinner, toilet and semi-porcelain specialties, have gone out of business. The record so far as can be ascertained is as follows: The Akron China Co., Akron, O.; American China Co., Toronto, O.: Goodwin Pottery Co., and the William Brunt Pottery Co., both of East Liverpool, O.; Wheeling and LaBelle potteries at Wheeling, W. Va.; Warker-Keffer China Co., East Liverpool, O., East Palestine Pottery Co., East Palestine O. (plant destroyed by fire and business being taken care of in another plant owned by same company); New Jersey China Co. (announcement made that concern contemplates going into the sanitary branch); Parkersburg Art Pottery Co., Parkersburg, W. Va.

In new construction, plants have been erected at Sebring, O., by the Saxon China Co., and at Paden City, W. Va., by the Paden City Pottery Co. The Cannonsburg (Pa.) Pottery Co., erected a new plant last year, doubling the capacity of that concern. The Radford Pottery Co., of Clarksburg, W. Va., sold its blocks, molds and cases to the Brush-McCoy Co., of Zanesville, O., and the corporation will be dissolved.

There is now talk of a 15-kiln pottery being erected at Chester, W. Va., by Charles A. Smith, of Chester, providing, however, 600 building lots in Chester can be disposed of. This proposition, however, has just taken root and no definite program has been decided upon. The plant of the New Castle (Pa.) China Co., has also been closed, and the property is to be offered at public sale during the current month.

There have been no new kilns erected in the East Liverpool, O., district during the last year, but the Shenango China Co., of New Castle, Pa., which manufactures a vitreous china body, is contemplating the erection of three additional kilns at an early date, which will about double the capacity of the plant.

Three additional kilns are to be erected at the plant of the Paden City, W. Va., pottery within the next two months, which addition will more than double that concern's production. Cooking ware and art pottery are being made at this pottery.

The formation of the Belmar China Co., of East Liverpool, O., under a Delaware charter with a capital stock of $250,000, may mean the erection of a new plant in the eastern Ohio district, but no definite plans of this new corporation have been announced by those interested. The incorporators of the new company are C. D. Crawford, Clyde E. Huss and B. H. Pusey, all of East Liverpool. These men are admitted to be only dummy incorporators. Two Pittsburgh men and one Philadelphia man are said to be the real backers of the new company. H. H. C. Hammerton, of Pittsburgh, Pa., and formerly of East Liverpool, and W. M. Losland, of Philadelphia, have been given financial prominence in the new corporation.

The charter of the company gives it considerable latitude, inasmuch as the concern has authority to lay out and operate town sites, water works, gas and electric light plants. Mr. Hammerton has spent many years in the development of a producer gas plant, and this may be operated in conjunction with the new pottery.

The plant of the American China Co., at Toronto, O., is being remodeled, for the property has been sold to new interests. Pottery will no longer be made there.

Thomas Price and C. J. Davis, who were operating the Toronto property, have taken over the plant of the Ohio China Co., at East Palestine, O., and have placed it in operation.

High winds did much damage to the C. W. Stine pottery plant at Crooksville a few days ago, which may result in the plant having to be rebuilt again. It will be remembered that several months ago this pottery was destroyed by fire, and as soon as the insurance was adjusted, the company commenced the rebuilding of the plant, and just as this was about finished the walls were so damaged by the high winds that they will have to be rebuilt for the most part.

Willard R. Morris has assumed the management of the Globe Pottery Co., succeeding Clarence H. Bauman. Mr. Morris was formerly a salesman for the Knowles, Taylor & Knowles Pottery Co., of East Liverpool.

Authorities at Sag Harbor, L. I., have decided to help the Peconic Pottery Co., of that place, by giving the company a two years' lease free with the privilege of a renewal, rent free, of the "school-house annex." The company will erect another kiln as a result of this move, giving employment to many other workers. Enough business has been booked by the concern to keep it in operation for six months.

Razing of the oldest pottery building west of the Allegheny Mountains has been started. This plant has long been known as the "Mansion Pottery" at East Liverpool, and is owned by the Croxall heirs, of which George W. Croxall is at the head. Yellow and Rockingham ware were first made in this plant by the use of the old thrower's wheel. For many years the place has been idle, because of the age of the building and the fact that the company transferred its business to its newer property. On the site of the old "Mansion," the church people of East Liverpool will erect a tabernacle, to seat 7,000 people, to be used when "Billy" Sunday makes his appearance in East Liverpool next September.

The withdrawal of Charles Howell Cook, of Trenton, N. J., from the management of the Pennsylvania China Co., at Ford City, Pa., July 1, will likely result in the advancement of W. L. Gray, formerly of the Goodwin Pottery Co., of East Liverpool, O., to a higher position.

It is currently reported that an effort is being made at Kittanning to form a new stock company of local capital to take over and operate the Kittanning pottery.

The A. Radford Pottery Corporation, of Clarksburg, W. Va., will dissolve ere long, and the charter will be surrendered to the state, according to action decided upon at a recent meeting of the board of directors.

In the wake of this report comes another that a new sanitary pottery is to be started at Clarksburg, and that a company for that purpose has already been formed.

With the above named potteries out of the market, there has been a generous distribution of the business formerly given these concerns to all other active potteries. The largest plants in the western district are working to capacity, and this has resulted in the summer shut down period being cut very short. In some instances plants have been idle only a few days, and a two weeks' suspension is the limit for idleness in the clay shops this year.

ELECTRIC SHOVEL REDUCES EXPENSES.

Offers Definite Advantages as to Convenience and Economy of Operation.

The expense attached to the mining of clay and shale is a serious one with the clay manufacturer. The invention of the steam shovel adapted to the particular requirements of the clay business effected a considerable saving in this particular, and with the extended use of the electrically equipped shovel, a still further reduction is secured in the excavation of earth and clay.

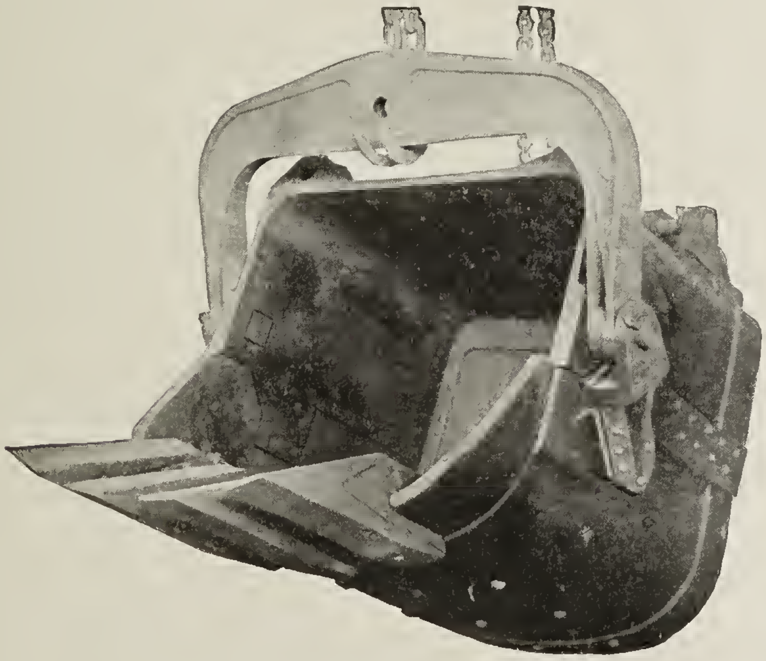
The application of electric power for shovel operation is constantly becoming more frequent. There can be no question as to the practicability of electric motors for shovels of the sizes and types herein mentioned. Thew shovels. so equipped, have ben in service for years, and in no case has an electric installation failed to give satisfaction. At times the electrically equipped shovel offers definite advantages as to convenience and economy of operation. No fireman is required, and the shovel, therefore, becomes a "one-man machine" in every sense of the word. The question of water supply is avoided together with that of transportation of fuel. In cold weather there is no danger from freezing. In hot weather there is no boiler to add to the discomfort of the operator. The banking of fires at night, the delay in getting up steam in the morning, and frequently the necessity for a watchman when the shovel is not in operation, are all features worthy of consideration, and which are avoided by the used of electric power.

The horizontal dipper crowding motion, an exclusive feature of the Thew shovel, enables this type of shovel to be advantageously employed for very shallow excavating operations. A depth of cut ranging from fifteen inches to two feet can be handled with an efficiency approximating 60 per cent of the regular rated capacity for general work. Even shallower cuts, down to six inches in depth, are practicable under otherwise favorable conditions. These features adapt the Thew shovel, especially when equipped for electrical operation, to the requirements of clay manufacture.

Electric Shovel Excavating Clay at Plant of the Alton Brick Co.

IMPROVEMENT IN STEAM SHOVEL DIPPER.

A noteworthy improvement in the design and construction of steam shovel dippers has been made by the Edgar Allen American Manganese Steel Co. of Chicago, Illinois, manufacturers of the "Stag" brand manganese steel castings. The dippers made by them are known as the "Missabe" dippers, and have already proven to be eminently successful. The first three made were put in service on the Panama canal about one year ago, and since then several of the largest operators in this country have adopted them. Every one in use is reported to be standing up in fine shape, and bears out fully the builders' claims for durability and efficiency.



Improved "Missabe" Clay Dipper.

Every part of the "Missabe" dipper, including the back, is of cast manganese steel. This fact alone insures great durability and a minimum cost in repairs, owing to the remarkable toughness and wearing quality of the metal. The design is said to be an improvement over other dippers, and to it is due much of the success attained.

Another remarkably good feature, claimed for the dipper, is the placing of the joint, between the front and back casting, behind the bail bracket so that the digging strain does not tend to pull the dipper apart.

The teeth are riveted on as usual, but are held unusually rigid by means of notches in the lip and shelf or offset on the outside of the lip, upon which rests that portion of the tooth which is on the outside of the lip. When extra protection for the front of the dipper is desired, a renewable bottom band as well as runners or shoes will be furnished when desired, or they may be cast integrally with the dipper front. All pin holes in bails, hinge brackets and dipper stick brackets are provided with renewable bushings.

Where a shovel is of high power and the digging is such as to throw great strain on the dipper it would seem that with this dipper, efficient and economical results would readily be obtained.

This dipper is built in all sizes for the various makes of steam shovels and dipper dredges, and is claimed by the manufacturers to have a life of three or four times that of the built up type.

BROWN ELECTRIC PYROMETERS.

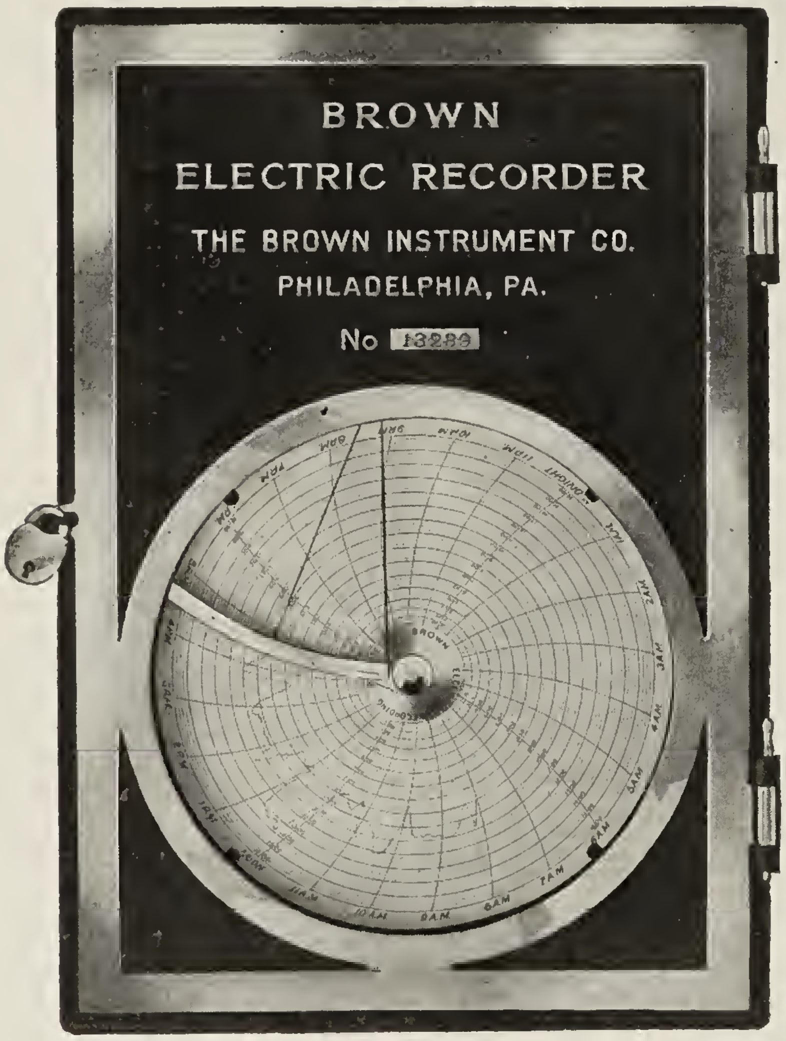
Electric Instruments Record Kiln Temperature in Superintendent's Office Quarter of a Mile Away.

During the past few years such enormous strides have been made in the development of electricity for use in every industry that it seems impossible to foretell what feats may be accomplished by electricity's aid in the near future.

At the present day we are able to generate electricity, to use electricity to generate heat, and then to measure that heat electrically.

The Brown Electric Pyrometer operates on the thermo-electric principle in which a current of electricity is generated proportional to the temperature to which a small thermo pile is raised, this thermo pile being inserted in the kiln, the temperature of which is to be measured. By means of wires the small current generated can be conveyed a quarter of a mile to an office where the manager or superintendent can note on a recording chart the temperature of any kiln at his plant.

Twenty-five years ago, such a device would have been considered impractical, visionary, but today they are in general service and the up-to-date clay manufacturer thinks no more of operating a plant without an electric pyrometer than one would attempt to run a business without a telephone.

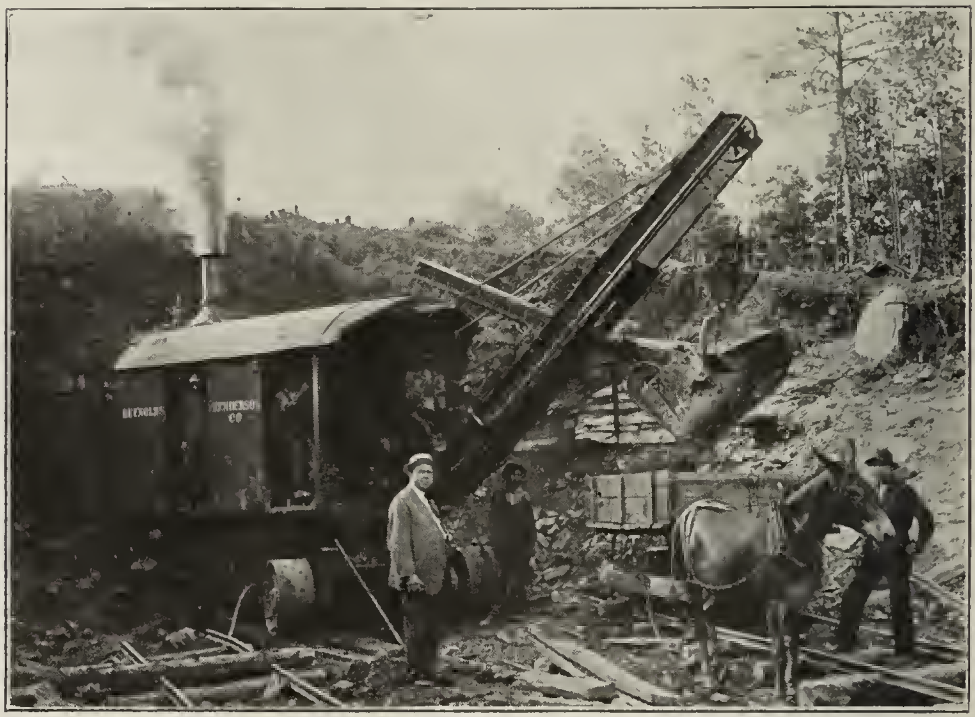


Improvements in the design of pyrometers, and the electric pyrometer show marked progress over the old type of instruments, and have naturally tended to produce much more up to date methods in burning clay products. The guess work of the old days is done away with, time in burning kilns shortened, and the fuel consumption kept at a minimum. Just as the telephone saves the time of the manager or superintendent today, the pyrometer equipment at the brick yard saves time and fuel.

MAKES REVOLVING SHOVEL FOR CLAY PITS.

Bucyrus Company, of South Milwaukee, Designs Small Type to Meet Special Needs of the Industry.

The Bucyrus Company, of South Milwaukee, Wis., is building a small revolving shovel especially designed to meet the requirements of the clay pit. The shovel is driven either by electric, gasoline or steam power and the economy of its operation, its great capacity and its wonderful elasticity makes it a most desirable adjunct to the progressive brick and clay product plant.


Bucyrus Revolving Shovels in Use at Birmingham, Ala.

The accompanying illustration shows one of these shovels in full operation. This machine was made for Reynolds & Henderson, of Birmingham, Ala., and is the 14B five-eighths of a yard dipper type. As shown in the photograph the material is loaded into small, two-yard cars, one on either side of the shovel. These were hauled at the time of taking these views about 1,000 ft. by a mule. A small boy was employed to drive the mule. An average of from 190 to 200 of these cars were loaded by the shovel and transported in a day of ten hours.

Two men, an engineer and fireman, operate the shovel and two men in the pit look after the placing of planking for the shovel to run on, and attend to the fuel.

At this time but two cars are employed, but as the haul becomes greater, more cars will be added and a small locomotive installed to replace the mules. Until this time the shovel has not worked to its full capacity, as there has not been a sufficient supply of cars to keep the shovel busy.

It has been found by the use of this outfit that on work of this character it is possible to move nearly as much yardage at a very much less cost, than with a large standard shovel outfit. It is argued that with the larger outfit of the standard type, much time is lost in heading in one car at a time, benching down and backing to start new cuts, whereas with the outfit herein described, the cut may be taken out at grade, full width and the work finished as it progresses. Furthermore, more cars can be loaded at a spot than with the standard type, as this type of shovel will dump the material at any point of a full circle and cars may be loaded at the rear as well as at the sides.

The working weight of this shovel is about 32,000 lbs. and the capacity of dipper ⅝ cu. yd.

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

The Michigan state prison at Jackson is to operate a plant soon for the manufacture of brick and tile. All buildings and kilns will be located within the prison walls and the output at the start will be 20,000 brick a day.

The Algona Brick & Tile Works, Algona, Ia., has contracted to furnish 235,000 brick for a new school building to be erected in that place in the near future.

The Ardmore Mfg. & Construction Co., Ardmore, S. D., recently turned out its first kiln of brick. The product was first class and the officials of the company look forward to a fast increasing demand for the product.

Washougal, Wash., has acquired a new industry in the organization of the Washougal Brick, Tile & Sewer Pipe Co. The plant will be in operation by August.

The company known as Aldridge Bros. & Co., brickmakers, of Fishkill, N. Y., is to discontinue business. The company has been reorganized and will be known hereafter as A. E. Aldridge & Co.

No more wooden schoolhouses will be erected in Lynn, Mass., providing the advice of Public Property Commissioner Bayrd is followed by the municipal council. If the plan is adhered to and brick construction is used the city will save thousands of dollars in schoolhouse repairs and general maintenance charges.

Business in the brick business in Boston, Mass., is more or less spasmodic. Sometimes there is a fortnight of active buying and then a lull. Recently there has been much done in the way of deliveries on old orders, but new contracts have been rather scarce. Prices are well maintained.

A report comes from Berlin, Conn., that the brick business there at the present time is far better than it was a year ago. The outlook for a good summer's business is excellent.

The Hartford Brick Co., Hartford, Conn., recently purchased the plant of the Parkville Electric Brick Co., Parkville, Conn.

The Coffeyville Shale Brick Co., Coffeyville, Kans., has installed oil burners in two of its kilns, and has erected two 6,000-gallon oil tanks. This was done to obtain an emergency fuel supply in case the gas pressure becomes too weak or gives out altogether.

A chemical brick plant is a new industry lately established at Collierville, Tenn. The new firm is composed of W. R. and J. A. Bryant.

Another large brick plant is assured for Redcliff, Alberta, Canada, although plans are not sufficiently matured for the names of the principals to be divulged.

Otis L. Jones, former manager of the American Refractories Co., at Rockdale, Ill., has organized a new company for the manufacture of fire brick. The factory will be erected at La Salle, Ill.

M. C. Cope, of Abilene, Tex., has leased the Leach wagon yards at Plainview, Tex., and will locate a sand-lime brick plant there. Work on the plant has already been begun.

B. Mooney & Sons, of Fairville, N. B., are installing a radiated heat dryer of the Raymond manufacture in their brick plant. When this is completed, with other improvements they are making, the capacity of the plant will be doubled.

The Farmers' Brick & Tile Co., of Austin, Minn., is doing a fine business, and the plant is running to capacity in an endeavor to fill the large number of orders booked. Four hundred and fifty cars are now booked for delivery.

Wm. Fribley will rebuild his brick plant at Bourbon, Ind., which was destroyed by fire this spring. Work will be started immediately and Mr. Fribley expects to have the plant in running order in 90 days.

Brazil, Ind., is enjoying a prosperous period, due almost entirely to the activity of the clay working plants located there. The town may be rightly called the clay center of the Middle West, for there are no less than nine active plants there devoted to the manufacture of clay products. Each one is operating to capacity and the business outlook is decidedly bright.

The McCook Brick Co., McCook, Neb., has lately made considerable improvement in the plant. New machinery was added which will double the capacity besides improving the quality of the brick.

The Pawhuska Vitrified Brick & Tile Co., Pawhuska, Okla., is enjoying a prosperous season. The company has orders on hand sufficient to keep the plant running to capacity for several months.

Ollie Wilson, manufacturer of brick and drain tile at Barnes City, Ia., was a recent caller at our office. He was in the city, purchasing machinery and supplies for the rebuilding and re-equipping of his plant, which was burned some time ago. Among the valuables destroyed, which Mr. Wilson valued most highly, were back numbers of "Brick and Clay Record" for 1912. He has all copies for the past thirteen years bound and considers them valuable additions to his library. We were pleased to supply the missing numbers and wish more of our readers would take sufficient interest to preserve and bind their copies.

At a meeting of the stockholders on June 10th, the Sphar Pressed Brick Works, Inc., of Maysville, Ky., was reorganized under the name of the Spahr Brick Co., and incorporated under the laws of Kentucky.

The company will continue the manufacture of red pressed brick, and machinery which they have already purchased will be installed at once for the manufacture of common, sand finished brick.

The Central Clay Products Co. is about to construct a plant at Beach Ridge, N. Y. (postoffice address North Tonawanda), for the manufacture of common and paving brick. The plant, as planned, will have a capacity of about one million brick per month.

Work has been resumed at the C. W. Renkert brick plant of Moberly, Mo., after a shutdown of several months, during which extensive repairs have been made. The capacity of the plant has been doubled and although the demand for brick is brisk, Mr. Renkert hopes within a short time to be able to meet the requirements of Moberly builders.

The work of rebuilding the brick plant at Sanford Corners, N. Y., which burned down some time since, has been begun and it is expected the plant will soon be ready for operation.

Many improvements installed at the plant of the Waverly (Va.) Brick Co. make it one of the best equipped brick yards in that section of the country. Among the new improvements are a cutting machine, which cuts 30,000 brick a day; a new boiler and engine and a dry kiln, which will enable the company to carry on the work during the winter months. Heretofore, the works have been idle five months of the year.

E. E. Weaver of Sugar Creek, Ohio, is contemplating the organization of a clay product company, with a view of establishing a plant.

A side track is being put in and construction work will soon be begun on the new plant of the Helm Clay Product Co., near Logan, Ohio. Twelve round down draft kilns will be built and the drying system will be put in by the C. W. Raymond Co., Dayton, Ohio. The company is capitalized at $250,000 and the product will be paving and fire brick. The officers are: L. S. Friedman, president; G. W. McMurchy, secretary, and J. F. Gebhart, manager.

The Mansfield Clay Products Co., recently organized at Mansfield, La., is capitalized at $100,000, of which only $40,000 will be sold at present, $60,000 being kept in the treasury. The company owns 160 acres of very fine shale land, located conveniently on a railroad in a successfully operated gas field. It is expected that building operations will be begun about September 1st. The product of the plant will be hollow building tile, fireproofing, drain tile, face brick, etc. John R. Brown is president of the company, and T. A. Snell, vice president and manager. Mr. Snell is a practical clay manufacturer, being president of the De Soto Brick Co. of Mansfield also. J. F. McFarland is secretary and treasurer of the company.

RECENT INCORPORATIONS.

The following incorporations are announced:

At St. Louis, Mo. The Fox Clay Products Co., capital stock, $5,000. Incorporators: Bert A. Fox, Thomas C. Fox, James Fox and Thomas Fox.

At Crooksville, Ohio. The Milligan Brothers Pottery Co., capital $25,000.

At Tip Top, Va. The Tip Top Brick Co., capital $10,000. Hoge Mason, president; W. H. Shuff, vice-president; J. H. Hoge, treasurer, and O. G. Scott, secretary.

At Roodhouse, Ill. The Roodhouse Pottery Co., capital $40,000. Incorporators: Henry C. Worcester, James V. Porter, Edward H. Higbee and Chas. W. Payne.

At Chicago, Ill. Terra Cotta Surfacing & Supply Co., capital $5,000.

At Boston, Mass. The Albany Clay Products Co. has been incorporated with an authorized capital of $800,000. The company's plant will be located in Albany, N. Y., and offices in Boston. The incorporators are F. H. Swift, New Bedford; J. B. Duchemin, L. Howland, W. J. Kelley, C. B. Earle and A. N. Rice, all of Boston; G. D. Elwell, Albany; J. G. Ketchum, New York, and T. L. Pomeroy, New York.

At Los Angeles, Cal. The Arthur Brick Co., capital $10,000.

The Silica Brick & Tile Co., Watertown, N. Y., has been incorporated with a capital stock of $75,000, to manufacture brick, tile, etc., and will establish and equip a plant. O. Watson, Watertown, and W. H. Gardner and J. F. La Rue, Philadelphia, are the incorporators.

The Dunkirk Brick & Tile Co., Dunkirk, N. Y., for manufacturing brick and other clay products; capital $30,000. Incorporators are R. W. Wright, W. E. Hilton, Dunkirk; S. M. Hamilton, Buffalo.

At Stanton, Ky. River Brick & Tile Co., capital $10,000. Incorporated by H. T. Derrickson, G. W. Conlee and others.

NEW YORK.

Eastern Conditions Much Improved—Heavy Demand for Immdiate Delivery.

New York, July 11.—Since the first of July, conditions in the entire burned clay industry in the East have improved. There is a heavier demand for immediate delivery in all the boroughs, and in New Jersey, collections improved as the money market became easier, following the close of the political conventions, and the inquiries have been reduced to contracts on a much larger percentage of projects than at any time so far this year. Prices are being steadily maintained in all departments and, in fact, there is actual stiffness in such lines as common brick, front brick, hollow tile and partition block.

In the distributing centers dealers are buying for immediate consumption, first, because there is a keen demand for good brick and, second, because there is not enough brick coming into the market to warrant stacking. As a matter of fact, there is little cause for stacking at the present time, as it is the general belief that prices and the supply will be without material change during the remainder of the summer. Current quotations on the best Hudson river brick are $7.00 flat, although there is some "run of kiln" brick that are finding a ready market at $6.75 per thousand in bargeload lots, dock, New York.

The Raritan river situation is exceptional, in that this commodity is bringing the same price that Hudson river brick brings on the open market. This includes the Matteawan products, which continues to be an important element in New York. It has been at least a decade since Raritan river brick has had the demand it now has and more than one dealer has admitted that were it not for the Raritan and Matteawan supplies there would be a shortage in the supply of brick in this market.

After July 4, it is generally the custom for some of the help on the brick yards in the Hudson valley to begin to seek steady fall work and, with short payrolls to start with, some of the plants are really seriously short of hands. The brick yard laborer is well paid; he has comfortable quarters yet the lure of the big labor camps has been too great for the nomad and he has sought employment there. All through the Hudson valley this summer tremendous railroad work is in progress. The New York, Westchester & Boston railroad has taken large quantities of men from the brick yards for the last two seasons, not because higher wages are being paid, but because most of that work is unionized and the hours are shorter.

But by the first of the month, the New York, Westchester & Boston railroad will have completed its first line to White Plains and it is announced by President Miller that the other extensions will not be undertaken until next spring, so that a large part of the labor that formerly was used on the brick plants will be returning to their old jobs at a time when the brick manufacturers will be working their plants to capacity to lay in a supply for the winter and the promised heavy fall demand.

Dry Weather a Boon to Brickmakers.

Reports from all the brickmaking centers during the last ten days are to the effect that the protracted dry spell which has prevailed in the East since the 22d of June has been a real boon to the manufacturers of common brick. The absence of rain has prevented the usual quantity of wash brick from coming into this market and the result is that builders are getting a far better grade of brick than they usually receive at this time of the year.

But even in this respect the scarcity of labor is a deterring factor because most manufacturers have to take their men from the yards to load the barges for market and thus the quantity of brick each can make is restricted.

In the front brick department a satisfactory volume of business is being taken. The renewed activity in the construction of apartment houses and loft buildings, a condition that was entirely unexpected earlier in the year, has brought out a demand which is exceptional in some respects.

In this connection it should be noted that almost every distributor reports a very strong tendency to rough faced brick as against the smooth surfaced front brick. In practically every conspicuous operation the growing popularity of this brick is made apparent by its generous use, which shows the value of advertising novelties in brick as in everything else.

Bond Issue for a New Jersey Company.

Rumors have been current in the market for some time that a bond issue of considerable size is in process of flotation for a New Jersey company which intends to aggressively enter the New York market with its products. The plant is located in the Perth Amboy district and it is reported that Daniel B. Ely & Co., of 80 Broadway, are the brokers in the negotiations.

Confirmation of the report in its entirety is not obtainable, but it is known that an investigation of the brick situation in the Raritan district with relation to the New York market has been under way for some time. It is reported that the company has an equipment for making terra cotta block, but as competition is extremely heavy in that department, certain backers of the enterprise are planning to install modern brickmaking equipment with electrical power with a view of entering the New York market aggressively.

Chemists who have analyzed the clay pits available to the proposed establishment are said to have reported an inexhaustible supply of good blue clay, practically free from iron and sulphur and comparable with the best Hudson river clay. The new plant will tap a virgin vein that borings show runs well into the knoll upon which the palatial home of Charles A. Bloomfield, president of the National Brick Manufacturers' Association, stands at Fords.

Everything here points to an active summer and fall as far as clay products are concerned. Most of the plants are working to capacity now to meet orders which have come in since the middle of June, most of which call for quick delivery. The favorable condition of the financial market is partly responsible for this improvement in demand. One of the best barometers of improved conditions is the state of employment of brick layers and other labor employed on buildings. Steel erectors are 75 per cent employed and bricklayers are reported to be 80 per cent employed, and when the real rush begins to get buildings completed by October first, when leases are made, it is probable that the percentage of employment of these artisans will be even heavier.

Troy, New York.

Troy, N. Y., July 12.—This city is growing fast. There are several stove plants here which use large quantities of fire lining and there is a good demand for common brick, but fire brick have been a little quiet. Common brick are selling here for $6.00 per 1,000. The low prices prevailing in the Boston market has hurt the brick trade here considerably.

The use of cement and concrete here has also hurt the trade some, many chimneys being built of that material. In Troy, the brickmaker can always sell the run of kiln, 90 per cent hard, but the Boston market is stricter and wants all hard, no soft allowed, so one can see how much money there is in it to ship to the Boston market, when they will not take run of kiln.

Brick were first made below Albany as early as 1664, yet importation from Holland was continued in the shape of ballast for the ships as late as 1790. In 1754, Dirick Vander Heyden and his three sons, Jacob, David and Mattys, made brick and sent them to different points on the Hudson and at this time brick houses made their appearance. The Ostrander Brick Co., still in business, made fire brick, clay blocks, tile moulder in a multiplicity of shapes in fire brick and block from 3 to 1,000 pounds in weight for furnaces, forges, foundries, rolling mills and steel works, where they are subjected to high degrees of temperature of expansion and contraction and to the effect of generated gases, all of which demands in a manufacturer, a wide range of knowledge to perfect the brick for purposes for which they are designed. The company has its own clay beds at Woodbridge, N. Y., and kaolin at Rossville, Staten Island, N. Y. The first blocks and tuyeres made were used in the Bessemer steel works in this city.

T. F. Morrissey, who is general manager of the Troy Brick Co. at Lansingburgh, a suburb of Troy, started 30 years ago in a swamp making hard brick. He worked hard and sold all he made in opposition to a $150,000 concern and later, bought out the big concern and organized the present company, which is incorporated. The plant is in fine shape, making 43,000 brick a day. Improvements recently installed include two new 250-horsepower boilers and a 250-h. p. Corliss engine. All the other machinery has been overhauled as well as the cars used for transporting the brick about the yard. The radiation steam heat system is used for drying, both in summer and winter, the cost approximating 50 cents more per thousand than by the open air drying. Coal has been used for burning, for a year or two, but, as the results were not entirely satisfactory, have gone back to burning wood. Sold 10,000,000 brick in 1907, running 11½ months straight.

The Troy Stove Lining & Fire Brick Works at First and Monroe streets began making fire brick in 1870. Harry S. McLeod later purchased the business of Bacon & Henry and enlarged the works, installing a new process for treatment of infusible clay. The stove linings and fire brick obtained wide popularity with stove manufacturers.

William Hulton, treasurer of the Troy Fireproofing Co., at River and Tyler streets, New York, is representative of the Wright plant, which is a most up-to-date one, the product being hollow tile, fireproofing, building, partition and floor arch block. They make 80 tons of terra cotta block a day, have eight down-draft kilns, with a capacity of 100 to 120 tons each. They own clay beds, 800 feet from the plant, sufficient to last for forty years. This clay is very tenacious, stands a very high heat and is procured by means of a Thew steam shovel. There are small cars running from one plant to another, carrying clay, the made blocks or broken pieces, which are used again and ground up. The product is sold mostly in the territory bounded by New York, Montreal, Rochester and Boston. Business is a little quiet now, but in April will be very busy, but the plant runs the year around. Mr. Hulton says that when he goes to the place that we all have to go to, he will take some fireproofing along.

Have put in two down-draft kilns, one 28 and the other 30 feet in diameter, a Williams patent crusher and new drying system. They make twelve sizes of partition blocks, two sizes of block tile, 15 sizes of floor arches and three kinds of round and square column covering. Thousands of tons of these 8-inch blocks are sold. The walls are warm in the winter and cool in the summer, non-conductors of sounds and very much used now for house building. A stucco on the edge of the wall prevents dampness, the blocks, according to size, have two, three and four air chambers. The blocks are subjected to such an intense heat that they are thoroughly fireproof. Prices do not vary much, and are practically the same year after year.

They have a nine-foot dry pan to grind and mix the old broken pieces and irregular blocks. Half clay and half terra cotta sawdust is used for the terra cotta lumber. The dryers have ten tracks in the upper and ten in the lower dryer, with fifteen cars on each track, that is, 300 cars are in the dryer all the time. Each car holds a ton, so there are three hundred tons drying at once. The upper dryer is said to be the only one in use anywhere in the country and is a new idea. This is called a double deck dryer, has an elevator to take the cars of blocks to the upper dryer and back again. When a kiln is burned a lid is raised in the floor, to allow cooling heat to be drawn into the fan to dry the material before going in the kiln. There are ten tunnels of 120 feet in length each, which makes 20 tunnels for drying the blocks as they come out of the auger machines. The best way to ascertain the hardness of the blocks when coming out of the kiln is to strike them sharply with a small piece of metal.

The Conroy Marble & Tile Works at 2373 Sixth avenue also does a good business.

McLeod & Henry, of 357 First street, make stove linings, getting their fire clay from New Jersey; have three kilns, but only use one a week. Business is not what it used to be, but was much better last year than it has been for a couple of years. The business is now dying out, as so many people now use gas stoves, furnace, steam heat and other heating devices. There is more or less steady demand, but only for stoves. The stove plants have been quite busy here, and are doing better. This is a good shipping point, but cannot compete with plants in Pennsylvania, West Virginia and New Jersey. They handle fire brick and act as agents for the Queens Run Fire Brick Co. of Lock Haven, Pa. The latter plant has been shut down for a few weeks, but is operating again and is busy.

The Robert Glass Co. of Roosick street makes about 2,000,000 brick a year, has 1,000,000 on hand now and will open up again May 1st, making common brick. The plant has a capacity of 25,000 brick a day, which sell at $6.00 per 1,000.

Mrs. Annie Painton has a brick yard at the head of House avenue, which is an open yard, making 25,000 common brick a day. The elder Mr. Painton died about a year ago and the three sons have now formed the Painton Brick Co., with a capital of $30,000, and will continue to operate the plant and push the business.

Milo Smith, of 543 River street, handles western products in brick, terra cotta, sewer pipe, etc.

The Cary Brick Co., of Hoosick and Fifteenth streets, made 5,000,000 brick last year. This is their last year in business here, as they have only enough clay to run through the year, and will run to full capacity to use up all that is left. They started earlier this year than usual on this account. The 1,000,000 brick on hand are practically sold. Many houses here are veneered with brick. Brick sell here for $6.00 run of kiln. As soon as the season is over for this year, the machinery at this plant will be dismantled and taken elsewhere to other clay beds or maybe moved to their yards at Cahoes. The plant has been in Troy for eight years, and uses the steam drying system, also have a plant at Mechanicsville.

The Cary Brick Co. has a plant at Newton Hook, which makes 200,000 brick a day. A steam shovel is used in procuring the clay. Brick are shipped to Boston by car and to New York by scow.

H. E. Retellick of Nineteenth street, Watervliet, has an open yard brick plant, drying in the open air. It depends on the weather as to the output, bad weather makes delays. The output in good weather is 22,000 brick a day.

PENNSYLVANIA.

"Hump" Removal Contract Calls for Large Quantities of Sewer Pipe. New Plants in Prospect.

Pittsburgh, Pa., July 12.—A pleasant caller in this district a few weeks ago was William Wallace, manager of agencies of the American Sewer Pipe Co., of Akron, O. The Pittsburgh offices of the American Company have been removed from the Bessemer building to the new Henry W. Oliver building on Smithfield street. Concerning trade, Mr. Wallace is an optimist. As a result of the municipal improvements now going on in Pittsburgh, the Pittsburgh office has booked orders for over 200 cars of sewer pipe and brick which are to be used in the big "Hump" removal contract. Deliveries are to be made as the improvement contracts progress.

C. E. Clark, manager of the sales department of the Kittanning Brick & Fire Clay Co., has returned from a brief visit to Chicago. Mr. Clark is vice president of the recently organized American Face Brick Association and is very popular in brick circles.

Operations have been begun at the new plant of the Nanticoke Brick Co., at Mifflinville, Pa., the capacity of which is placed at 50,000 per diem. Both paving and building brick are being manufactured.

Leiby & Flurie, brick manufacturers at New Cumberland, Pa., have made a request of the State Railroad Commission to inform them why the Speeceville Brick Co. can obtain a 30-cent rate on freight to Harrisburg, while the former company is charged 50 cents, and has a shorter haul.

Shull & Badger, brick manufacturers at Butler, Pa., seeking to make quicker deliveries, thus saving time and money, have bought from the Butler County Auto Co. a 3-ton Gramm motor truck, made by the Gramm Motor Truck Co., of Lima, O. The truck has a 75-horsepower engine and a maximum speed of 14 miles an hour. The truck is used exclusively for hauling brick.

The Altoona (Pa.) Real Estate Agency is offering a well equipped brick plant in that vicinity for sale at $25,000. The plant originally cost $40,000. The present owners are going into the coal mining business.

The work of razing the old Second Presbyterian church, at Seventh street and Penn avenue, has been completed, and Golden & Crick, of 3512 Fifth avenue, will erect on the lot a theater to cost in the neighborhood of $250,000 for the Penn Avenue Real Estate Corporation. The structure will be 110 by 120 feet and will be of terra cotta, brick, steel and hollow tile. Sub-contracts are being placed now.

The Shepherd Brick Co.'s plant at Canonsburg, Pa., has been purchased by Donley brothers, of Washington, Pa., who will operate it on an extensive scale after making improvements. Special machinery is to be installed. The plant is more than 20 years old.

J. Charles Wilson, of 451 Third avenue, has been awarded the contract for building a two-story brick fireproof school building for the Board of Education of West View, to cost $20,000.

Preliminary plans for the erection of a two-story and basement office building for the Orenstein-Arthur Koppel Co., at Koppel, Pa., have been prepared. The building, it is said, will cost about $30,000.

The Monessen (Pa.) Lodge, No. 773, B. P. O. E., has purchased ground for the erection of a handsome two-story brick temple to cost $30,000. The basement is to be used as a grill room, bowling alley and billiard hall, the first floor for lodge room purposes and the second floor for a dancing hall.

A three-story brick high school building is being built at Freedom, to cost $50,000. L. V. Kirker & Son are the general contractors, while the brick masonry contract went to W. C. Kinsley, both of Beaver Falls.

Alwinn Oliver of Sewickley, Pa., near here and Max Spann of this city have formed the Kittanning Face Brick Co., with a capital stock of $5,000, which is said to be only nominal. The company has but recently secured its charter.

Brick machinery salesmen here have been advised that the Mountain Smokeless Coal Co., at Casselman, Pa., contemplates going into the brick business during the present year.

Daniel Custer & Son, of Johnstown, Pa., have taken the selling agency for a number of well known building brick lines for that territory, and have opened a display room in the Lincoln Building.

Operations have been resumed at the plant of the Mt. Union Refractories Co., at Mt. Union, Pa. A number of improvements have been recently made to the property..

The Meredith Brick Co., which recently erected a new brick plant on the Pennsylvania railroad four miles west of Reynoldsville, Pa., has begun operations. The first kiln of brick fired was used for the construction of other kilns. The plant is under the management of Thomas White, and the company is composed of Mr. White, W. A. Meredith of Punxsutawney, Pa., and A. O'Connel, of Reynoldsville.

At a cost of $7.50 per thousand, George T. Dickover & Son of Wilkes Barre, Pa., secured the contract for the brick to be used in a large sewer construction job in that city.

The first kiln of brick has been burned at the new plant of the Waynesboro (Pa.) Brick & Supply Co. The construction of the plant is of recent date.

Construction of five additional kilns has been decided upon by the Royalton Shale Brick Co., at Royalton, Pa. The plant is being operated under the management of L. V. Halberstadt.

The Howard Brick Co., at Bellefonte, Pa., has been put in operation, and business is reported good. The officers of the company are: president, Al. D. Alvin; vice president, W. H. Long; secretary, Charles G. Bowers; treasurer, Balser Weber. Fred T. Bard, formerly with the Williamsgrove Brick Co., at Bigler, Pa., is now superintendent of the plant.

The Blackfox Brick Co., of New Jersey, has opened an office and show room in this city, having headquarters at 111 Market Street. The principal office of the company is in Camden, N. J.

A new pug mill has been installed in the plant of the Saxton Vitrified Brick Co.'s plant at Saxton, Pa. Other improvements contemplated by this company are the erection of five additional kilns, and the installing of a new crusher, brick machine and a new boiler.

Contracts have been awarded for the rebuilding of the B. Dawson Coleman brick plant at Middleton, Pa. The product is made of shale.

A rumor is current here that a new brick plant is to be built at East Brady, Pa., and that the formation of the company is now in process. Detailed information cannot be had at this writing.

George A. Heltman, for sometime connected with the Karthaus Fire Brick Co., has become identified with the West Branch Fire Brick Co., at Drury's Run, near Lock Haven, Pa., as a salesman.

OHIO.

Many Orders Booked—Federal System of Weighing to Be Established.

Columbus, O., July 13.—Throughout the Buckeye State brick and other clay product manufacturers report business good, although here and there one hears a bit of alleged price cutting. Orders for paving brick, building brick and sewer pipe are good, and the office files are quite well filled with new business.

Plants are working on good schedules, and shipments are generally prompt, except in some instances where yard stocks have been found to be short on account of the heavy demand. Shipments, direct from kilns, is a general rule throughout the state.

Brick manufacturers and other clay product shippers throughout the state are making great preparations to give the Interstate Commerce Commission a large volume of information concerning the car load weighing methods of the various railroads. Probing into these methods by the Commission is expected to result in the establishment of a federal system of weighing—a standard—so to speak. This is the prediction at least of J. T. Marchand, counsel for the Commission. The stenciled weight on a car is said not to amount to much and is conflicting in many instances with the real or true weight of a car.

Announcement has been made that the board of directors of the Buckeye Coal & Clay Co., of New Salisbury (Columbiana County, Ohio), that a bond issue of $100,000 will be offered at an early date, and that the stockholders will be given the first opportunity to announce their subscription. It is also reported that the stockholders will take the entire issue. The company has been manufacturing sewer pipe for some time, and has also been operating very successfully large coal mines at New Salisbury.

The Findlay Red Brick Co., of Findlay, O,, composed of E. Jackson, David Kirk, Jr., Wilbur Ewing and others, contemplates the erection of a brick plant to have a capacity of 30,000 daily.

Louis Koblitz and others have formed the American Building Brick Co., of Cleveland, O., with a capital stock of $10,000.

The new plant of the Ashtabula Shale Brick Co., at Ashtabula, O., is nearing completion, and is the only factory of the kind in that section of the state. The plant is located on the Lake Shore railroad, just 500 feet outside the city limits. It will have a capacity of 50,000 brick every 10 hours. Between 65 and 70 men will be employed and the payroll will be in the neighborhood of $1,700 every fortnight. The company is paying its labor from $1.75 to $3.50 per day. The plant includes eight distinct buildings, and eight down draft kilns in which brick will vitrify at 2,200°. The drying tunnels have a capacity of 96,000 brick, the waste heat system being employed.

The dry room has 116 tunnels, each 116 feet long, each having a drying capacity of 6,000 paving block, a total drying capacity of 96,000 paving block.

Hereafter the Niles (O.) Fire Brick Co. will use natural gas for kiln filing instead of coal. Mains to the plant have been laid.

The Farr Brick Co., of Cleveland, has commenced the rebuilding of its plant. Four additional up-draft kilns are being built, and the boiler house will be 60 feet square and the machine shop of the same dimensions.

The George B. Patterson Co., of Wellsville, O., has just been awarded the contract for the construction of a mile of paved roadway in Smith township, near Sebring, O. This completed, the township will have eight miles of paved highways.

The new plant of the Malvern Fire Clay Co., at Canal Dover, is nearing completion, and will be ready for operation within a few weeks.

Clay workers employed in the various sewer pipe plants in the vicinity of Uhrichsville, O., have formed a labor organization. This organization was effected through George E. Neesham, of Pittsburgh, Pa. About 200 clay workers are identified with the new movement, it is said.

An application has been made for a charter for the Rogers Clay Co., of Rogers, Columbiana county, Ohio, by John W. Hall, of East Liverpool, and Patrick Connor. The plant has been inactive for some time, but the new interests contemplate placing it in immediate operation.

The Marion M. Allen Supply Co., of Cincinnati, has bought the plant and business of the Newport, Ky., Brick, Coal & Supply Co.

E. P. Lippencott, of Pittsburgh, Pa., with several associates, has begun the erection of a new tile manufacturing plant at East Liverpool, and the railroad siding has been completed. This will be the only tile plant in that pottery center.

The Novelty Brick Co., of New Comerstown, O., has let the contract for the erection of four additional kilns to Marion Hammond & Co., of Canal Dover, O.

INDIANA.

Business Better Than Last Year.—Tile Used for Street Signs.

Indianapolis, Ind., July 12.—Trade has been brisk with the brick men during the last month. There have been no large jobs let locally, but the ordinary business has been excellent, especially along the line of brick for foundations and brick veneer dwellings. The latter type of dwellings are becoming more and more popular and are building up a good trade in the high grade brick. The sewer pipe trade is only medium but is expected to improve within the next two or three weeks, owing to the large number of sewer contracts that are to be let. Taken as a whole, the brick and sewer pipe and drain tile business, so far this year, has probably been ten per cent better than it was during the corresponding period of last year.

The city of Indianapolis has recently begun the practice of placing tile street signs in all new cement sidewalk work. The signs are of blue and white tile, the letters being worked out in blue, and are made by the United States Encaustic Tile Works at the company's local plant. Letters in the signs are about four inches high and being naturally practically indestructible, are much better than the old signs which were placed on houses and poles.

Suit was recently brought in the circuit court in this city by John Radke and Emma Radke asking that a receiver be appointed for the Indiana Press Brick Co., which was organized and incorporated in 1909 with an authorized capitalization of $300,000. The Radkes allege they own the property on which the plant is located and all of the machinery, valued at about $20,000. Radke says he was to have received 5,997 of the 6,000 shares of stock, but that only 999 shares were issued to him. It is alleged the company is hopelessly insolvent. Those interested in the company are E. A. Coulter, president; Laurence Elkus, secretary and treasurer. The plant, which has been manufacturing brick, earthenware and pottery, is located in the southern part of the city.

In a decision of the case brought by the Indianapolis Mortar and Fuel Co. against the Aetna Indemnity Co. to recover for material used in an Indianapolis sewer, the Indiana supreme court has held that where a surety company signs a sewer construction bond, the fact that it writes into its bond that its liability shall cease on the acceptance of the work by the city, does not prevent a material dealer from recovering for material furnished and not paid for before the acceptance of the work.

The William P. Jungclaus Co., of this city, has been awarded contracts by the Indianapolis board of school commissioners, as follows: New eleven room school building at Roosevelt avenue and Olney street, $82,288; four room addition to school at Rural and Washington streets, $18,500 and addition to school at Park avenue and 23rd street, $32,300. All of the work is to be of brick construction.

H. H. Pierce, C. F. Pierce and H. H. Dupont have organized the Gypsum Tile & Plaster Co. in this city for the purpose of manufacturing building tile and plaster. The company has been incorporated with an authorized capitalization of $35,000.

The Indiana State Railroad Commission has refused to allow the railroads operating in the state to increase freight rates on tile and has ruled that the maximum rate shall be the same as that for the Central Freight Association territory. It was thought by the commission that to permit an increase in rates would be a severe blow to farming, in that it would interfere with the proper drainage of farms on account of the cost of distributing the tile.

Chicago capitalists, who recently formed a brick company, contemplate establishing a $100,000 plant in Lake County. An option has been taken on eighty acres of land, and whether or not the plant is to be established depends upon a satisfactory test of the clay. Those said to be interested in the project are the following: Christian Becker, a director of the Chicago City Bank & Trust Co.; Louis Pasel, capitalist and builder; Thomas Brisch, president of the Rockwell Lime Co.; W. L. Woods, president of Standard Material Co.; Louis Rathje, president Chicago City Bank & Trust Co.; L. E. Armstrong, president Plymouth Clay Products Co., Ft. Dodge, Ia., and S. E. Clark, superintendent of a brick plant at Manteno, Ill.

THE MIDDLE NORTHWEST.

Increased Demand Noted for Hollow Brick and Silo Block—Building Strike Averted.

The brick trade through the Northwest is variable. Some of the common brick yards in the vicinity of the Twin Cities have had a poor season, and a few of them have almost decided against operating at all for the season. They have carried over a good stock from last year, the demand has been limited during the season, so far, so they cannot see any great necessity for adding to their stock. On the other hand, in some interior points through Minnesota and the Dakotas, some of the plants had a good call, and have been unable to keep up with the demand. Those plants have usually been institutions which are turning out specialties in hollow brick or similar ware. The demand for hollow brick has been materially better than for the straight common brick.

Another specialty which has been selling excellently so far this season, perhaps because there is but little competition, is the hollow block, used for the construction of clay block silos. The use of silos is growing, and with the prospects for an immense fodder crop this season, farmers are interested in preparing for it. Several concerns which specialize upon clay block for silo construction have been able to book all the orders they could handle.

In straight building construction around the Twin Cities, the demand for common brick has been limited, and stocks have been ample for all purposes. Some of the yards have been able to place a fair portion of their make, but others find a very hard field.

An attempt has just been made, with poor results, to declare a general building strike in Minneapolis, because of the open shop rule which has obtained with the leading contractors. Soon after the first of June, there were some mutterings that this was coming, and about the middle of the month, the first attempt was made, when a number of workmen were pulled from a job just being completed. There was not enough work left to make it a difficult matter to complete. The same tactics were followed on several other jobs. But the general contractors stood firm. The bricklayers was the hardest proposition to handle, for this organization is strong, but the contractors would not yield to the demand for a closed shop, and after three weeks of idleness, the strike was called off, and the men have been allowed to go back to work, if they can find work left for them to do.

Brick and clay manufacturers of Austin, Minn., have filed complaint with the Minnesota state railroad and warehouse commission on account of the freight rates on their product to points in Western Minnesota, as compared with the rates made on clay ware from Mason City, Iowa, same forty miles south of Austin, the shipments going through Austin to their destinations. This inequality of rates occurs since the restoration of commodity rates in Minnesota. This was done after the decision of the Federal court in the Minnesota rate cases, that the lower rates ordered by the commission were too low. The order of the Federal court was for a restoration of the old rates, but in the restoration, it has not followed that the new rates were equitable. Complaint has been made upon this point repeatedly, and at the last convention of the Northwestern Clay Association this same fact was pointed out, and a committee was appointed to formulate complaint to the Interstate Commerce Commission. The success of the Wisconsin association prompts a hope for similar success in Minnesota. As the Minnesota rate cases are pending before the Supreme court, if the latter body overrules the lower court, the action will not be necessary, for that would restore the lower rates. But if they are sustained on the higher basis, there will be a prompt filing of complaints by many brick plants, along the same line.

The Heron Lake Brick & Tile Co., of Heron Lake, Minn., recently received a telegraphic order for a shipment of material for Bismarck, N. D. The order was received in the afternoon, and early the next morning, the first car was shipped, and it was delivered in Bismarck in five days.

It begins to look as though the worst of the troubles of the new company at Fairmont, Minn., were over. This company, the Fairmont Drain Tile & Brick Co., has tested out its clay beds at Blue Earth, and found that they make a very satisfactory product. The Northwestern road has granted a low rate on clay from Blue Earth to the plant at Fairmont, and sidings are being constructed into the clay beds and into the yards, giving favorable shipping facilities both ways. The company now anticipates being able to put out it product at a price which will meet competition.

The geological department of the University of Minnesota is conducting a series of investigations of the clays to be found in various parts of the state, and doubtless will have a complete report upon this line to be made within a few months. The department has been enlarged and improved and has solicited questions from clayworkers through the state, regarding troubles which they encounter. The co-operation of this department will help materially in advancing the clay industries of the state. As the industry is building up in different parts of the state, it is entitled to all the assistance that other states extend to the same trade.

The annual meeting of stockholders of the Redcliff Brick Co., of Redcliff, Alberta, was held in Minneapolis recently.

CANADA AND THE NORTHWEST.

Owing to the increase in business, E. F. Dartnell, S. Beaver Hall Square, Montreal, Canada, has formed and incorporated a company under the Dominion Charter, to carry on the business established in 1893 as a dealer in building supplies. The new company is known as the Dartnell, Limited, of which E. F. Dartnell will be president. M. L. McGiverin, who has been associated with the business for the past three years, will be vice president of the company.

Reports recently issued by the Canadian Department of Commerce and Labor, for the year ending March, 1912, show that Canada imported brick, tile and other clay products valued at $2,719,852, showing an increase of $525,118 for the same period in 1911. Of the amount imported so far this year, the United States received orders amounting to $2,145,931, while the United Kingdom received $565,650.

HELP WANTED.

Wanted.

A brick burner—one who has had experience in burning with natural gas; no application will be considered unless accompanied with first-class references; give age, experience, etc. Address: Arkansas Brick & Mfg. Co., Little Rock, Ark. 7-1-3

Wanted.

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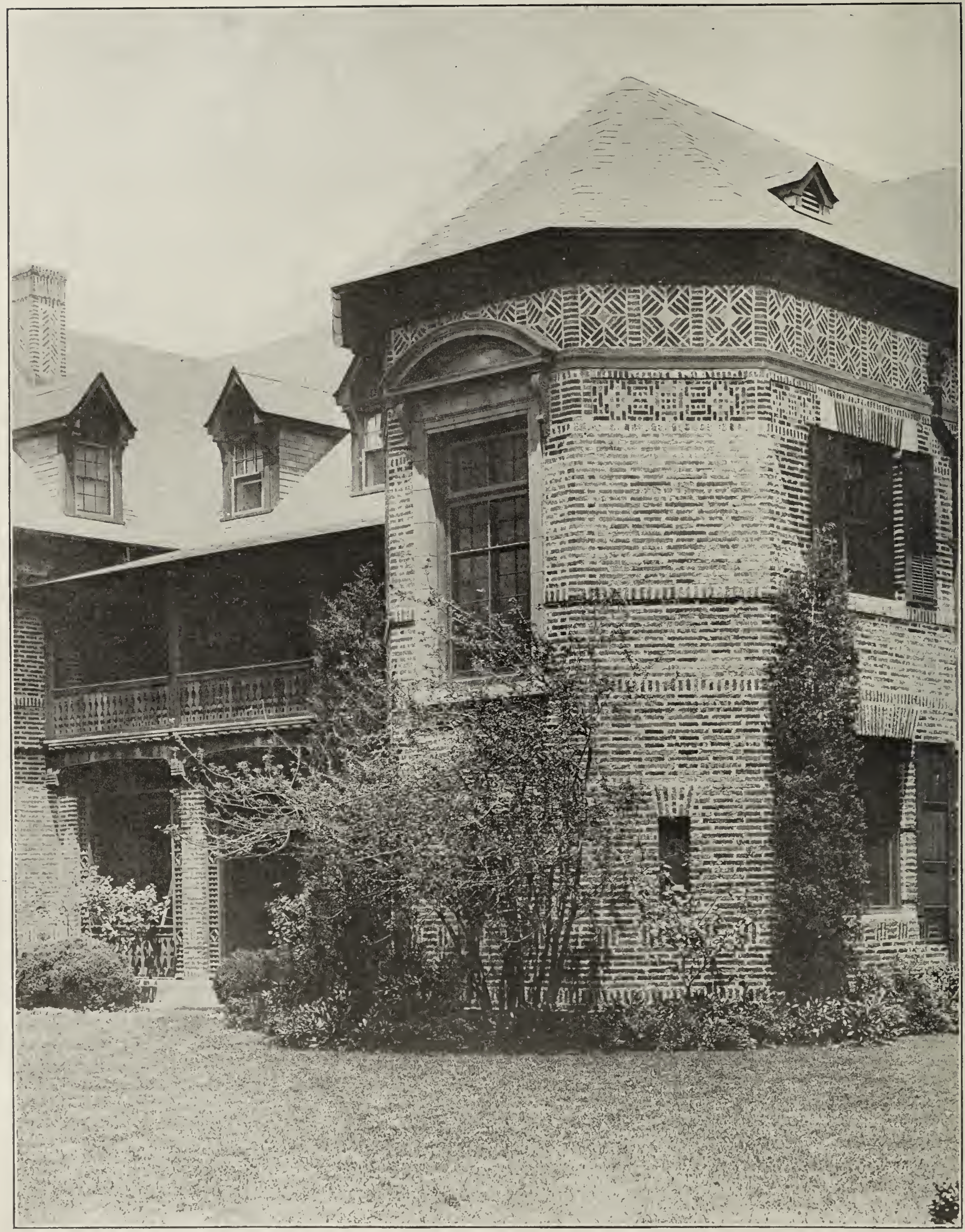
AN OYSTER BAY RESIDENCE IN ROUGH FACE ART BRICK



One of the prettiest residences in Oyster Bay, L. I., is that of James A. Blair. It is built entirely of brick, rough cut facing being used of a light gray color. The style of bond is Flemish, and the mortar joints are one inch in thickness. The picture shown gives a detailed view of the stair tower and presents a fair idea of the artistic effect to be had with brick.

VOL. XLI—No. 3

BRICK
AND CLAY RECORD

AUGUST 1, 1912

TELLS OF ROOFING TILE'S EARLY HISTORY

Geological Survey of Ohio Issues Bulletin, Giving Interesting Data on Earliest Form of Primitive Man's Architecture

Adam and Eve may not have used tile roofing in their suburban home after their first May moving day, but it has been established that this method of roofing was known and in general use many centuries before Christ, and there is a strong probability that it was one of the earliest forms in the primitive architecture of men.

The bulletin recently issued by the Geological Survey, of Ohio, on the manufacture of roofing tile, gives an interesting account of the history of the material and, while admitting that the origin of roofing tile is still shrouded in obscurity, it connects the baked clay shingles with the first permanent buildings erected by man.

The bulletin is a very exhaustive treatment of the subject and not only goes into the history of the roofing tile industry of the United States, but also the manufacture. "Brick and Clay Record" gives in the succeeding pages generous extracts from the bulletin so far as it relates to the early history of the industry. These follow:

By WOLSEY GARNET WORCESTER AND EDWARD ORTON, JR.

EARLY in man's career, he doubtless lived in such caves and natural shelters as are found in a mountainour country, but, as he migrated from place to place, it would happen that natural shelters could not always be found. The impulse and suggestion for him to construct temporary caves, or shelters of slabs and pieces of rock, would be a perfectly natural one and doubtless has recurred many times in various places and peoples in the development of the human race.

These early homes were no doubt covered with some sort of thatch or stone roofing material; in mountainous countries flat stones of flaggings would naturally be tried. Experience unquestionably soon taught these early home builders the value of a sloped roof over a flat one, in shedding the rains.

According to Morse, the antiquity of the sloping roof is hinted at in the finding of cinerary vessels in the form of huts, and, consequently, known as hut-urns. These have been found in Italy, Saxony and other parts of southern Europe. It is believed they were made before the age of iron.

The sloping roof must have preceded the roofing tile by many centuries. At the outset, bark, straw, thatch, rough stones and similar substances were used until better devices were made, which finally culminated in roofing tile of terra-cotta. The oldest known type of clay roofing tiles is, by far, the most common form in use in the world today.

Tile Survive Prehistoric Relics.

Most natural stones crumble, and metals oxidize or rust, but hard burned clay wares are nearly imperishable to the influences of decay. Thus it happens that terra-cotta roofing tile are often the only surviving relics of a prehistoric structure. The enduring nature of these objects may ultimately enable us to trace the paths followed by the tile-making races in their various migrations.

While the actual beginnings of roofing tile are not known, it is probable that their use was known very early in Asia Minor, and certainly very early in China. From the high skill of the potters and the great antiquity of the fictile art in China, and the use of artistic roofing tile in that country in buildings erected some centuries ago, one might easily be led to believe that it was in China that the use of roofing tile originated.

Graeber, in his memoir "Terra-kotten am Gieson," describes what he believes to be the earliest known terra-cotta roofing tile. These were found in the ruins of the Temple of Rera at Olympia, dating nearly a thousand years before Christ. This ancient tile consisted of two elements, a wide under piece (tegula) slightly curved, and a narrow, semicylindrical piece (imbrex) which was placed in an inverted position so as to cover the upturned edges of two adjacent tegulae.

Among the substances used in the construction of early roofs, worked marble tile, modeled after the terra-cotta tile, were made some 650 years before Christ.

It should be understood that colonies, past and present, usually adhere to the form of roofing tile in use in their parent countries. As an illustration, flat tile made in Montgomery County, Pennsylvania, about 1735, can be traced to the old German settlers. At Bethlehem, Pennsylvania, the Moravians were making tile as early as 1740. The pan tile discovered by Dr. C. C. Abbott on Burlington Island, in the Delaware River, on the site of a very old house, said to have been built in 1668 by Peter Jagon, points clearly to the Dutch settler as its author. In California and Mexico, the normal or half round tile used in the missions were made by the early Spanish conquerors.

The tiles found in the above described localities are believed to represent the first use of roofing tile in this country. It is quite possible that some of the first tiles used were brought from home by the colonists from their respective countries.

History of Roofing Tile in Ohio.

Taking up the history of roofing tile in Ohio, it has been found a problem of less magnitude to trace their development. On a branch of the Cincinnati Northern Railway, some thirty miles to the northeast of Cincinnati, is found the quaint old village of Germantown, which the records seem to indicate as the site of the first roofing tile manufactured and used in Ohio.

During the year of 1814, Philip Gunckel laid out the village, and named it after Germantown, a suburb of Philadelphia, which still retains that title. About this time a John Robinson cast his lot with the early settlers of the little town, and began the manufacture of brick from clay gathered in a nearby field. Wishing to build for himself a home that would outdo those of his pioneer neighbors, Mr. Robinson made clay roofing tiles in quantities sufficient to cover his home and stable.

The accompanying illustration shows clearly the form and outline of the tile made by Mr. Roboinson. These tiles were no doubt made from the same clay, and burned in the same kilns, as the brick which Mr. Robinson manufactured. The house has long since been destroyed, but the old stable withstood the ravages of time and storm until 1907. It was razed to make way for a fine library building. The photograph shown elsewhere was taken just before the work of destroying the old building was begun.

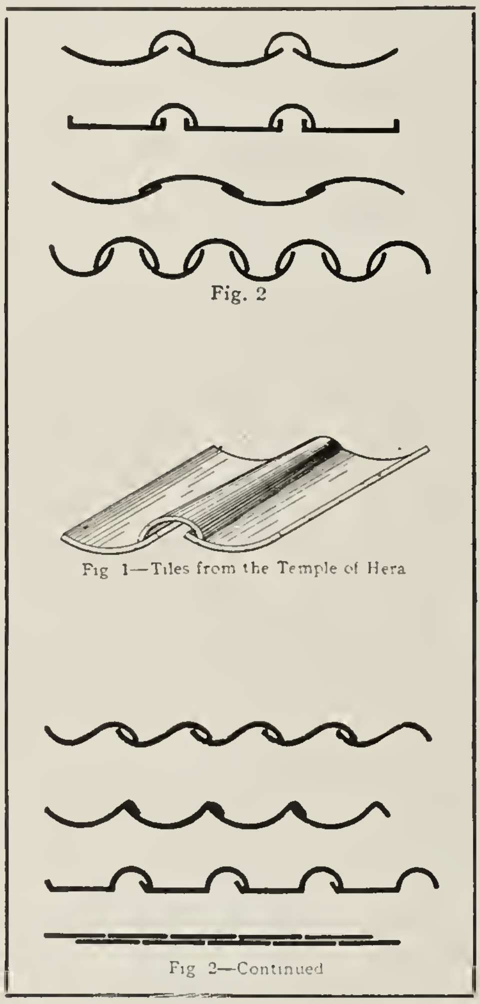


Fig. 2

Fig 1—Tiles from the Temple of Hera

Fig 2—Continued

Tiles Made in Many Lands, Dating from Ancient to Modern Times.

The view of the stable shows the roof in a dilapidated condition, not from the failure of the tile or brick in the structure, but from the rotting of the wooden beams and rafters, so that they could no longer carry their load.

To the right in the picture stands a corner of the new library building, upon which can be seen roofing tiles of modern manufacture. A more striking contrast could scarcely have been found, the one tile showing the marks of time and the primitive methods of manufacture of a century ago, while the other presents a roof of the present day.

The Robinson tile at Germantown was probably a sporadic case only, and does not probably stand for the introduction of the industry, as we have no evidence that he manufactured tiles for other than his own needs.

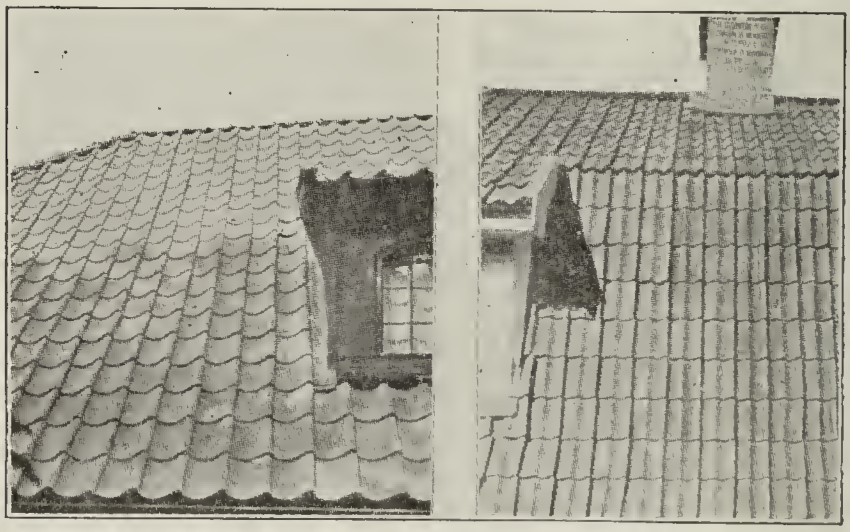
Unquestionably, the next step in the production of roofing tile in Ohio was taken by the Zoarites, a German religious sect, who settled in Tuscarawas County about 1820, and built a town which they called Zoar. The manufacture of roofing tile by these people was upon a much larger scale than the early efforts of Mr. Robinson at Germantown, as practically all of their buildings were tiled. One only has to look upon the many old roofs that can still be seen standing today at Zoar, to recognize that the use of roofing tile was not new to the people of Zoar. They came from a country where tile had been used for centuries before they sailed away to build their Utopia in the wilderness, where they could be free to follow their own beliefs.

How the Zoars Made Tiles.

These Zoar tile are shingle tiles of the pattern known as the "Beaver Tail," the outline and style of which can be traced back to their native town, Wurtemburg. The tile were all hand made; the clay was dug in the nearby fields, hauled to the tile yards by oxen, dumped into soak-pits, where water was added and the clay allowed to stand till soft. After soaking for a day and night, men tramped the clay with their bare feet until it was properly kneaded or pugged. It was then covered over with straw, weighted with rails or boards, thus keeping the clay plastic until needed by the molders. It was then spaded out and carried by hand to the small workbenches of the molders. Wooden molds were used which were previously wet and then sprinkled with sand. The molder first took up a lump of clay, which he rolled into a long tapered roll, similar in shape to a loaf of rye bread. This roll of clay was then thrown or slammed forcibly into the center of the mold, and the molder, using his forearm and hand, would hammer or manipulate the clay until it completely filled the mold. The excess clay was scraped off with a straight edged stick.

Ordinarily the tile would have been considered complete at this point, but by observing the tiles shown in the illustrations, it can be seen that their faces have been grooved with gutters, or lines running lengthwise of the tile. These grooves were produced by the fingers of the workmen, each finishing his tile with lines that seemed most appropriate to him.

A two-fold purpose was filled by these grooves; first, they broke the monotony of the otherwise plain tile, and secondly, they furnished a means of keeping the rain water away from the lateral joints.


Specimens of Double and Single Groove Roofing Tile as Shown in "Tegel"—a Swedish Trade Paper.

The tile were carried from the molding benches by boys, to drying racks or floors, where they were emptied out from the molds and left to dry. The mold was carried back to the work bench, where it was first dipped in water and then sprinkled with sand, in readiness for another operation.

The burning was carried on in up-draft kilns similar to the up-draft clamp kilns used by manufacturers of soft mud brick at the present time.

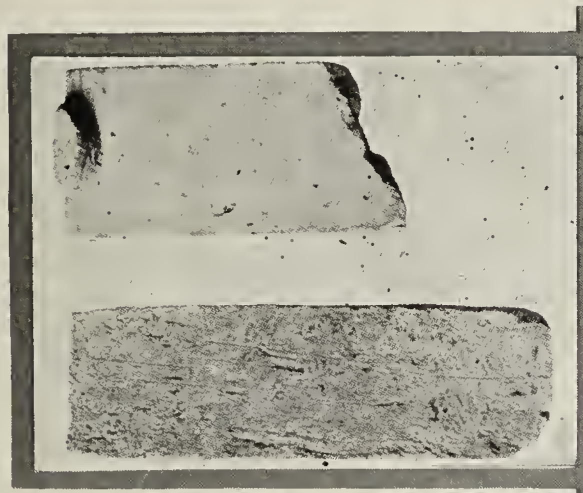
Tile manufacture was carried on by these quaint people until about 1852, when it was discontinued.

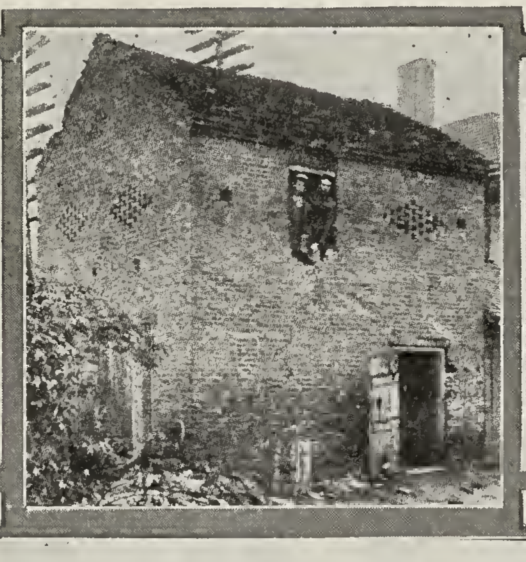
The next step in the evolution of the manufacture of roofing tile in Ohio and probably the earliest establishment of the industry on a commercial basis in the United States, came during the year 1871, when J. B. Hughes, of Terre Haute, Ind., received letters patent on roofing tile of interlocking design, and at the same time on a machine to make such tiles.

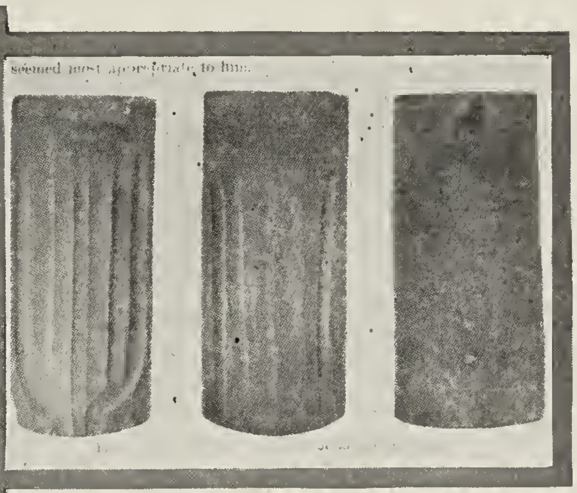
Among the first to become interested in the Hughes tile, was John W. Conrade, of Zanesville, Ohio, who, during the year 1873 purchased the right to manufacture the Hughes tile. Mr. Conrade opened a small plant during the fall of the same year and carried on the manufacture of the tile during the following winter. No roofs were covered, however, until the spring of 1874, when the residence of A. H. Watts in Zanesville was constructed with this tile. The Conrade factory did not continue long in operation.

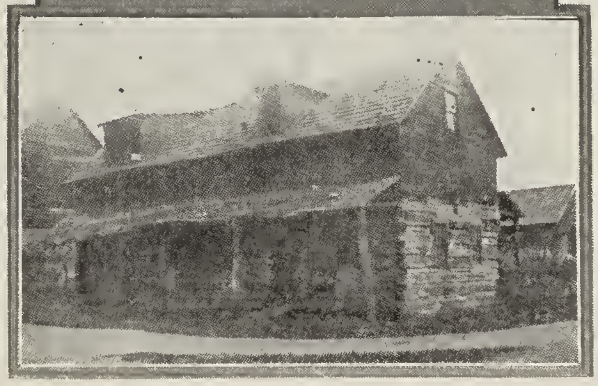
Second Man to Make Tiles.

Closely following the starting of the Conrade plant at Zanesville, Edwin Bennett, at Baltimore, Md., embarked in roofing tile manufacture. In the beginning, the Bennett plant was also operated under the Hughes patents. Mr. Bennett was without doubt the second man in this country to take up the manufacture of roofing tile on a commercial scale. His plant was opened in 1876 and was in continuous operation up until the summer of 1908, when, owing to the death of Mr. Bennett, operations were stopped and it since has been dismantled.









At the left are shown Robinson's tile, made at Germantown, O., 1814. Upper picture shows building roofed about 1814, with tile made at Germantown, O., by the Zoars. Lower picture shows old tile-roofed church at Zoar, O. At the right are hand-made roofing tile made by the Zoars.

In 1877-78, Harris B. Camp, at Cuyahoga Falls, Ohio, began the manufacture of roofing tile. Mr. Camp had a most interesting personality. He only continued a short time in this branch of clay manufacture, when he sold his interests to J. C. Ewart, of Akron, Ohio. Mr. Ewart took up the work with much faith and energy, and unquestionably has done as much or more than any other man to promote the use of roofing tile in the United States.

It was not until a number of years after the starting of the Akron plant, that the roofing tile business was taken up by other manufacturers throughout the state. Among them was The Repp Roofing Tile Co., New Philadelphia, Ohio, about 1893; The Barnard Tile Co., Bellaire, Ohio, in 1893; Zanesville Roofing Tile Co., at Zanesville, Ohio, in 1895; another one at Ottawa, Ohio, in 1900. None of the above plants operated to exceed three or four years at the longest, and none was successful in founding successful industries.

About the same time, i. e., in 1895, a plant known as the Cincinnati Roofing Tile and Terra Cotta Co., was started at Winton Place, near Cincinnati, by Jacob Freund, inspired, as many of our German citizens are, with a true love and appreciation of a good tile roof.

Starting in a very modest way, this plant was built up step by step by its founder and associates. The problems of manufacture here were studied independently and met in their own way, as in the Akron plant, and while the product was of different shape and design, the business became slowly successful.

In 1902 a roofing tile plant at New Lexington, Ohio, was erected by a company of which A. W. Brown was president. This plant, at the time of its building, was designed upon broad lines, with ample provisions for enlargement, and, in its short career of eight years, has developed into the next to the largest, if not the largest, roofing tile plant in the United States.

Following the New Lexington plant was one at Lima, Ohio, The National Roofing Tile Co., built by A. B. Klay, a native of Switzerland.

Since gathering the field notes for this report, during the summer of 1908, a company has been formed at Canton, to build a plant at Sparta, Ohio, to manufacture dry-pressed roofing tile.

Plants Established Elsewhere.

Considering the establishment of plants outside of Ohio, the Mitchell Clay Co. during the year 1866 undertook the manufacture of roofing tile at St. Louis. They were, however, in advance of the times and after a period of about five years they discontinued the manufacture of this line of goods.

Other attempts were made at several points throughout the country, none of which met with success until the plant of the Celadon Terra Cotta Co., of Alfred, N. Y., was built in 1888, by George Babcock. This plant was one of the pioneers, and has been in continuous operation from the time of its building. At present it is one of the plants owned by the Ludowici Celadon Co., of Chicago.

During 1890 a plant for the manufacture of roofing tile was built at Ottawa, Ill., and known as the Chicago Terra Cotta Roofing and Siding Tile Co. It was operated by various owners for about twelve years and was dismantled.

About 1893 the Ludowici Roofing Tile Co. was formed and built a plant at Chicago Heights, Ill. This plant has grown steadily from the start until today it ranks among the largest.

The next plants of importance were the Standard Roofing Tile Co., St. Louis, built in 1895, and the Ohio Valley Clay Shingle Co., now the Huntington Roofing Tile Co., of Huntington, W. Va., built in 1899. During the following year, 1900, the Ludowici Roofing Tile Co. built a plant at Liberty City, (now Ludowici) Georgia.

It was not until three years later that other plants were built. During the year 1903 there were three plants built, The United States Roofing Tile Co., Parkersburg, W. Va., The Mound City Roofing Tile Co., St. Louis, Mo., and the Western Roofing Tile Co., Coffeyville, Kan. The next year or during 1904. The Murray Roofing Co.'s plant was built at Cloverport, Ky. Following this was the building of the Detroit Roofing Tile Co.'s plant in 1906.

The latest company to enter the roofing tile field is the New York Roofing Tile Co., at Saugerties, N. Y. Other companies that are manufacturing or have manufactured roofing tiles, either alone or in connection with other clay products, are, The Alfred Clay Co., Alfred N. Y.; Burns and Russell, Baltimore, Md.; Golden Press Brick Co., Golden, Colo.; Los Angeles Pressed Brick Co., Los Angeles, Cal.; Gladding, McBean & Co., Lincoln, Cal.; The Steiger Terra Cotta & Pottery Co., South San Francisco, Cal.; N. Clark & Sons Co., Alameda, Cal.; The Carnegie Brick & Pottery Co., Tesla, Cal.; The Clay Shingle Co., Montezuma, Ind.; Spillman Brick Co., Spillman, W. Va., and probably a number of others.

Roofing tile are now manufactured in all parts of the world occupied by civilized races. In the far East we find well established industries in China, Japan, Java, India and the islands of the Asiatic coast. The manufacture of tile in these countries is possibly not as great at the present time, as it has been in the past, owing to the frequent relaying of the excellent tile, made years ago by their ancestors, on modern structures.

The Industry in the United States.

While the first manufacturing of roofing tile in this country has been shown in the preceding pages not to be of recent date, it is nevertheless a comparatively new industry here. We have been slow in taking up the use of roofing tiles for several reasons which are discussed in detail a little later.

At present, however, American ingenuity in this field, as in many others, has triumphed over time and tradition. Although slow to enter this field, our progress since entering it has been rapid, and American tile today have many points of excellence, and some of superiority.

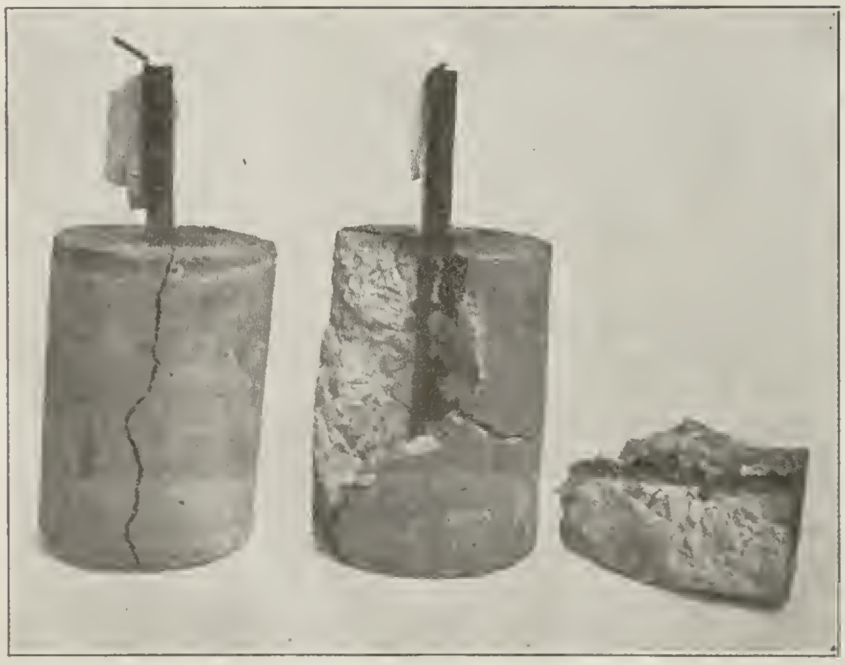
From the crude presses brought into this country from Germany, England and France, our inventors have developed new roofing tile machinery that leads the world in simplicity, strength and output. Many improvements in the materials of which dies are made, and also in the construction of dies, have been made in the past few years, until now the time honored plaster die is to be found in but few roofing tile plants.

The chief objection to plaster dies has been that they must be renewed daily, owing to the rapid rate at which the soft plaster surface wears away, leaving the tile made upon them with a very rough and uneven exterior, which catches dust and dirt, and soon presents anything but an attractive appearance. To overcome these objections, our manufacturers have employed dies made of such materials as cast iron, steel, brass, gun-metal, aluminum, and various alloys, all of which are being used with more or less success.

In the past thirty years, the capacity of the roofing tile plants in this country has grown from the insignificant sum of from twenty-five to fifty squares per day, which is about the output of a single average plant, up to nine hundred or a thousand squares per day, if worked full time. In other words, the output has been increased from that of sufficient tile per day to cover a single medium sized building, to a number that would cover, roughly speaking, about twenty buildings of the same size.

TESTS SHOW ELECTROLYSIS DAMAGES CONCRETE

CONSIDERABLE alarm has been occasioned in building circles, throughout the country, on account of the startling revelations made as to the destructive effect of electric currents on reinforced concrete. Persistent rumors of injury by electrolysis, causing the disintegration and failure of many large and expensive concrete structures, has led to various laboratory experiments, the results of some of these tests having been previously reported in "Brick and Clay Record."



Results of Tests Made by the Bureau of Standards, Showing Effect of Electrolysis on Reinforced Concrete.

For obvious reasons architects and owners of damaged buildings have been slow to answer inquiries concerning the behavior of reinforced concrete when exposed to electric currents. The subject, however, has been deemed of sufficient importance to cause the Bureau of Standards, Washington, D. C., to undertake elaborate tests and experiments to determine the exact amount of damage which concrete buildings sustain through the agency of electrolysis, and while the report has not yet been prepared for publication, the accompanying illustration shows some results of the tests made.

The wise builder would do well to avoid a material which cannot stand exposure to electrolysis, an important factor to be reckoned with in all large cities.

BRICK OUSTS CONCRETE IN LOUISVILLE

Builders of $4,000,000 System, in Which Material Was Specified, Find Clay Products Must be Used When Work is Begun

By G. D. CRAIN, JR.

SINE QUA NON" is a Latin phrase which is the strongest possible equivalent of "indispensable." Brick and clay products have proved to be a sine qua non in cases where other materials apparently were to be used exclusively. When the actual construction began, the product of the kiln was found to be absolutely necessary, and it was accordingly called into use.

This happened in building the $4,000,000 sewerage system now being completed in Louisville, Ky., after having been in course of construction five years. The big trunk sewers, ranging in diameter from six to fifteen feet, were planned to be of reinforced concrete exclusively, entirely on a basis of cheapness. But when it came to building the final portions of the sewers, where a steep grade had to be provided for at the connection with the Ohio river, it was found necessary to furnish a material which would resist corrosion indefinitely. That meant but one thing—brick.

PICTURE OF NEGLECTED FARM SHOWING LAND WASTED BY EROSION
PICTURE OF SAME FARM AFTER INSTALLATION OF DAMS & PIPES AS SHOWN BELOW
INTERSEPTING DAM ACROSS STREAM
DEPOSITED EARTH
RIGINAL BED

Painting in the Municipal Exhibit at the Clay Show, Illustrating Proper and Improper Drainage Methods.

While it is well known that in building systems which must take acid content of sewage into consideration, brick must be used, this factor did not appear in Louisville, because sewage there is alkaline for the most part. The condition referred to, however, made the use of brick imperative, and a lot of it was required for the big job, first and last.

The necessity of providing Louisville with adequate sewerage facilities to supplement the insufficient drainage system which had been serving, developed several years ago, though the money for the construction of the sewers was not provided until a long while after City Engineer J. B. F. Breed had begun recommending action in that direction. The legislature in 1906 finally passed an enabling act providing for a bond issue of $4,000,000, and this was voted on at the municipal election the following November, the mayor having appointed the commissioners of sewerage in the meantime, and Mr. Breed having been named by them as chief engineer. Harrison P. Eddy, of Worcester, Mass., served as consulting engineer.

The bond issue was approved by a big majority, and the construction of the system, which was planned after careful study of topographical and meteorological conditions, was begun. The plan of the commission was, first, to build large trunk sewers to take the place of the small overloaded ones which were attempting to carry the waste of the city at that time, and, second, following their completion, to build as many lateral or connecting sewers as possible with the money remaining.

Practically all of the available amount has been spent, and the trunk lines have been built. Much remains, however, to be done, in connection with building laterals and for special purposes, such as transforming Beargrass creek into a sanitary sewer which will drain a large part of the city properly. The work now to be done, and for doing which a $2,000,000 bond issue is pending, will be accomplished almost entirely with vitrified pipe, whereas, the larger part of the work thus far has been done with other materials. The work has been handled by contract exclusively.

The attitude of the commissioners has been favorable as far as brick and clay products are concerned. They are regarded as essential, and while the main portions of the Southern Outfall, Beargrass intercepter, Twelfth-street and other sewers were not built of those materials practically all of the smaller jobs have been clay throughout.

Chief Engineer Breed has stated succinctly the reasons for the use of brick and the considerations preventing its universal application to the needs of the commission, even though the Louisville system is not called upon for the wearing service which some cities might demand of it.

"We have used vitrified brick in constructing all inverts where there is a fall of more than one foot in ten," said Mr. Breed to a representative of "Brick and Clay Record." "Concrete has served admirably in the general work, being economical and capable of being quickly laid, but brick is the only practical material for inverts which are subjected to the constant corrosive wear of sewage flowing at a rapid rate.

"Here in Louisville we do not experience a great percentage of decaying acids in the sewage. The two lines of materials may be said to divide honors here, for there is no conclusive evidence of the nature of a concrete sewer's contents having an effect upon the walls and, of course, the brick inverts successfully resist all acid tests to which they are subjected.

"It is undoubtedly true that more brick would have been used in the construction of the trunks had it not been for the unusual expense incurred by the commission in securing a good grade of vitrified block. We could not think of using any merchantable brick made in this part of the country and accordingly have been forced to go quite a distance into Ohio or Illinois to secure a good grade of material even in the face of heavy freight rates."

Brage Loaded with 15-in. Drain Tile at Plant of Post Bros., Commerce, Mo., During High Water Period Last Spring.

The city's system of trunk sewers is well along toward completion. The great Southern outfall sewer, which drains practically the entire southern half of the metropolis, is the most important link in the chain. The eastern half of the city is provided for in two trunks along Logan and Garden streets flowing into Beargrass creek, a narrow stream which in time will be converted into an immense sewer in itself. The creek drains extensive territory through eastern and southeastern Louisville, in sections which are becoming populated rapidly in the present-day trend of suburban residences to the Highlands. It lends itself readily to conversion into a sewer, in the opinion of engineers, and this work is to be a matter of the future.

Past Year Eclipses All Years.

That the city of Louisville itself, in the erection of the lateral systems which are coupling with the trunks, has used brick and vitrified tile exclusively and that a greater mileage of laterals was erected during the fiscal year of 1910-1911 than during any similar period in the past twenty years are facts established by the engineering department of the city, acting independently of the commission itself. The general council provides the money for the erection of these supplementary systems.

When the city was confronted with the problem of providing laterals it had accumulated a great deal of experience in the work. Salt-glazed, vitrified pipe proved best for the work and accordingly for the past two years this material has been used exclusively. Not more than half a mile of circular brick drains has been set during that time.

The old sewer system was composed almost entirely of circular brick laterals with brick cisterns at every corner or intersection. A mortar capable of permanently resisting even the weak acids of the Gateway City's sewage has not yet been introduced, and consequently in years gone by the authorities experienced a great deal of difficulty with leaks and cave-ins. It was because of this trouble that pipe has been adopted as standard.

Sewage Growth is Rapid.

Ten years ago Louisville possessed less than 100 miles of laterals, and today the total is a fraction above the 140 mark. Forty miles of drains have been laid within the past ten years and the greater proportion of this work has been carried on during the past three years because of the entrance of new trunk lines which necessitated new or additional laterals. The process of filling tracts in suburban districts and in sub-divisions with dirt from down-town excavations, practiced so extensively in recent years, has made new outlying territory habitable, especially in Parkland and in South Louisville, with the result that laterals in these districts, connecting with the Southern outfall, have been demanded by the city's boom.

An idea of the expansion of the sewerage work which has been carried on under the direct supervision of the municipal authorities may be gained from the record of construction since the fiscal year 1904-1905, when a total of 107.074 miles of brick and tile sewers existed. The record follows:

Total mileage to 1904-05..	107.074
Constructed in 1904-05..	2.227
Constructed in 1905-06..	1.733
Constructed in 1906-07..	1.689
Constructed in 1907-08..	2.967
Constructed in 1908-09..	2.242
Constructed in 1909-10..	5.390
Constructed in 1910-11..	**7.322**
Total miles to the current fiscal year	132.904

The present municipal year, which ends Aug. 31, should bring the aggregate well up to 140 miles, in the opinion of the city engineering department. During the past three years upwards of twenty miles of new laterals have been constructed, a mileage which ordinarily would be accomplished in ten or more years of the city's growth. Of course, the greater part of this record-breaking performance is due to the introduction of new trunks, for at least 65 per cent of the work of the past three years is connected with these arteries, while the other sewers are the result of the expansion of the suburban sections.

Specify Vitrified Pipe in Work.

The records of sewer construction since 1909 specify "vitrified pipe" almost exclusively as a material, in view of the passing of the old circular brick type of drain. An exceptionally good grade of salt-glazed pipe is procurable in Louisville, and the engineers have discovered that this material is efficient as well as economical. A line of pipe, properly jointed and thoroughly inspected, is permanent and durable, it is asserted, for there is no chance of defect arising except from breaks in the pipe itself—a contingency which rigorous inspection guards against.

BALTIMORE ADOPTS BRICK FOR PAVING

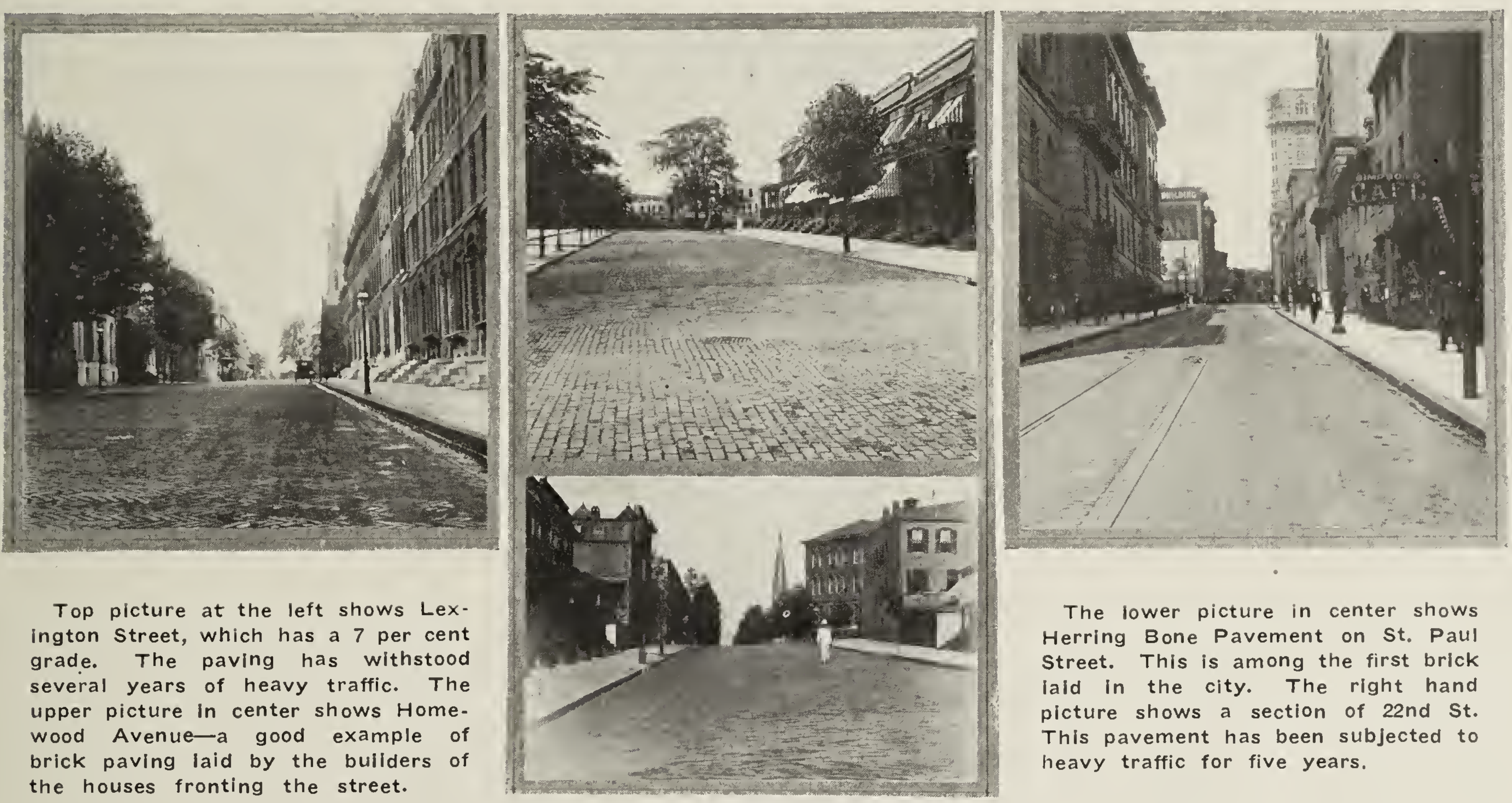
Authorizes $5,000,000 for Purpose and Will Lay More Than One Hundred Miles in Next Few Years

By STUART STEVENS SCOTT

DURING the next few years 2,300,000 square yards or more than 100 miles of vitrified brick will be laid in Baltimore. More than one-fourth of this paving will be done in alleys, much to the improvement of the sanitation, and the rest of it will be on streets that have light to medium traffic.

While the Monumental City has but little experience with brick paving, having only 23.4 miles at present, that experience has been most satisfactory and there already would be much more of it were it not that in former administrations the "powers that were" preferred other substances.

Under the present administration, however, the keyword is "the best of everything," and brick has come into its own. It will be the future paving material on all thoroughfares where it is believed that it will give the best service; hence the paving commission, of which R. Keith Compton is the chairman, has selected more than 100 miles of streets and alleys to be paved with vitrified blocks. Already contracts for several miles of this paving has been let and specifications have been prepared, and bids have been asked for several more miles.



Top picture at the left shows Lexington Street, which has a 7 per cent grade. The paving has withstood several years of heavy traffic. The upper picture in center shows Homewood Avenue—a good example of brick paving laid by the builders of the houses fronting the street.

The lower picture in center shows Herring Bone Pavement on St. Paul Street. This is among the first brick laid in the city. The right hand picture shows a section of 22nd St. This pavement has been subjected to heavy traffic for five years.

Baltimore's First Brick Paved Streets.

Brick Is Still in Good Condition.

The first brick paving was laid in Baltimore in 1892, when small bricks were used on one block of St. Paul street, between Preston and Biddle streets. These bricks were laid "herring bone," which proved to be a rather expensive method, and when repairs have been made from time to time, the new bricks have been put in straight across from curb to curb. Much of the original brick remain, however, and are in good condition and an excellent demonstration of the wearing qualities of this material for there is considerable heavy traffic on St. Paul street.

With the exception of a few other pieces of brick paving here and there, no more bricks were used until 1900, at which time the vitrified block was introduced. This block, much of which is manufactured by the Westport Paving Brick Company of Baltimore, has been used with good results on heavy traffic streets, some of them having a grade of 7 per cent.

One of these streets is Lexington street, on the north side of the court house, and the accompanying illustration shows the condition of this thoroughfare after several years' hard service. During the past year, however, it was found necessary to groove the joints so that horses could obtain a foothold. The Westport company is now putting out a "Hillside block" with one side beveled, and this style block will be tried out on an 8 or 9 per cent grade.

Mr. Compton is an enthusiast on brick paving, largely because he believes that it is more efficient for its cost and maintenance than any other character of paving.

As Assistant City Engineer of Baltimore for several years, he was in close touch with the paving situation, and in 1910 he made an exhaustive report on the subject of maintenance. He took into consideration the areas of the five kinds of paving used in Baltimore, and on a square yard per year basis he gave the following figures as a cost of maintenance:

Asphalt block	7c.	Sheet asphalt	9c.
Granite block	2½c.	Vitrified brick	0.4c.
Macadam	3c.		

These figures may be disputed by some experts, but generally they will be accepted as fairly accurate in the average run of cities.

Mr. Compton also prepared the following table of cost of paving:

	Sq. yd.
Sheet asphalt, 2-inch topping, 6-inch concrete base	$1.73
Vitrified block, on 6-inch concrete base	2.10
Granite block on 6-inch concrete base	3.17

Cites West as Model to Go By.

In a recent address before the Engineer's Club of Baltimore, Mr. Compton spoke of the various materials used for paving in Baltimore and on the subject of vitrified block said:

"Vitrified block are used as a smooth and durable material in between asphalt and Belgian block. The speaker is not aware of the date of its introduction into this country, but, however, it was previous to the late eighties. Much doubt was expressed as to the availability of this material for paving purposes, when first introduced, but its advocates persevered until today it is regarded as a standard material.

"It was used almost exclusively in the smaller towns in western Pennsylvania, Ohio, West Virginia, Illinois and Indiana, which are known as being within the 'Brick Zone.' or where the manufacturing plants are located. Its cost there, on a 4 to 6-inch concrete base, with a cement filler, is about $1.50 per square yard. It is now used extensively in the South, the block being furnished to a very large extent by our local plant.

"While on a recent trip for the Paving Commission, the speaker inspected some of the finest vitrified block streets in Cleveland, Ohio, which have ever come under his notice. They were fairly noiseless and smooth and, according to the engineer's report, were very durable, having been in use for twenty-five years.

"The speaker observed that the West is far ahead of us in laying vitrified block streets. Here we select good blocks, but do not lay them properly. In the West they pay as much attention to the work of construction (particularly the cement filling), as they do in selecting the blocks. First-class blocks, improperly laid, make a poor street. Second-class blocks, properly laid, make a good street. However well laid, they are to some extent noisy; they form a fairly good foot-hold for horses on a grade up to 7 per cent, unless the blocks are too hard; in that case, in my opinion, there is not much choice between them and sheet asphalt on 7 per cent grades.

"For steep grades, what is known as the 'Hill-side block' is now being manufactured. With one side beveled, it is claimed that better foot-hold is given for horses. When properly selected and constructed, vitrified block is in the end the cheapest paving to maintain. It was first introduced in Baltimore in the year 1892; its cost today, using the local block on a 4 to 6-inch concrete base, with cement filler, is from $1.90 to $2.10 per square yard, depending on the location, and whether on street or alley."

$5,000,000 for Paving.

To rid Baltimore of cobble stone streets, the legislature of 1906 passed an act authorizing the city to borrow $5,000,000 to be used in financing a general paving proposition. The act provided for a commission of five citizens to constitute a paving commission and this commission was appointed after the Act was ratified at the May election of 1911.

The paving of the city will be done on a street tax plan of assessment which calls for an annual tax per front foot per year for ten years on property binding on improved streets as follows:

For streets 30 feet and over between curbs	15c.
For streets 12 feet to 30 feet	10c.
For streets and alleys under 12 feet	5c.

Corner property will be charged for front and one-third of the side.

Property on streets which have been paved under any form of assessment prior to ratification of this act is exempt, but property on streets that have at any time been paved at the general expense of the city, must bear its share of expense of re-paving.

As the money produced by this tax is collected, it is to be expended under the jurisdiction of the paving commission, and it is expected that the total revenue from this source will be $4,500,000, which, with the $5,000,000 procured by loan, will be sufficient to remove every cobble stone street and alley in the city.

The commission has available now $1,500,000, which will enable it to construct at least twenty-five miles of improved paving this year, and anticipates having $1,000,000 to spend each successive year until the work is completed.

Brick to the Front.

"Brick" is certainly coming into its own in the matter of publicity. One can scarcely pick up a country newspaper without coming across some items boosting brick. In a recent issue of the Ridgway (Pa.) Daily Record, we noticed a number of items which are no doubt the result of the work of the Ridgway Brick Co., manufacturers of high grade face brick in red, buff and gray. These little "locals" are just what is needed to keep the matter before the public. We understand the Ridgway Brick Co. is running to its full capacity and has a very bright outlook for the year. One of the items appearing in the afore-mentioned paper follows:

> One reason why the cost of living has risen is that business men are keeping more accurate costs and the consumer must pay cost plus a profit. Do you know that on nearly everything your purchase there are from three to five insurance cost items. If only brick and steel were used for construction purposes these insurance costs would be cut in half. Use brick for building purposes and save money and use Ridgway brick.
>
> If you contemplate building this year, give careful consideration to the use of brick. One way to save on painting, insurance and other up-keep costs is to use Ridgway brick.

Getting Ready to Build.

We are informed that the projected plant of the Commonwealth Clay Co., at Streator, Ill., is soon to be a reality. Chicago capitalists, who are planning to finance the proposed industry, after thorough investigation, find everything favorable and have decided to furnish the money and machinery necessary to build and equip the plant. The plant, which is to be located northwest of the city, will, we understand, be one of the finest and best equipped of any in the country, if present plans materialize. The company has secured options on more than 200 acres of shale land, nearby, which will furnish material for many years to come. Tests of the clay, show that it makes splendid paving brick. Mr. Albert Warren, who is manager of the company, proposes to have two machines with a capacity of 250,000 paving brick a day, but at first will install one machine in temporary quarters and make brick for the construction of permanent buildings and kilns, to be erected later. About $300,000 will be represented in the investment in lands and machinery. The American Clay Machinery Co., Bucyrus, O., will furnish the equipment for the plant.

ESSENTIALS OF COMMON BRICK PLANT

Proper Organization and Discipline Necessary to Produce Harmony Among Workers—Cost System Cures Price Cutting

By W. F. Stuart*

In establishing a plant for manufacturing clay products the first step is to find suitable clay in sufficient quantities located conveniently near a good market and where good shipping facilities are available.

When the location has been decided upon, the next step is to secure the necessary money to build the plant and provide ample working capital. The latter phase of the deal is too often neglected, with dire results. One may have a first class plant, so far as mechanical equipment is concerned, built without ample funds to meet the pay-roll, coal and repair bills and to carry accounts and a reasonable surplus stock, it is next to impossible to make a success of the business. I believe there are as many failures in the clay business from lack of money as from all other causes combined. A firm may have good credit and good backing and be able to borrow money at the bank, but one should not lose sight of the fact that with every note there is a pay-day, and it usually comes when one is least able to meet it.

Common brick is a low priced product, and must be handled upon a comparatively small margin of profit. It is essentially a large plant product, and requires a large capital investment, both as to equipment and working capital. The large plant has the advantage over the small one, in that its overhead and fixed charges are so much lower in proportion to output that the small plant is placed at a decided disadvantage in the production of this commodity. In fact, the large plant can in many instances sell brick at a price below the cost of production possible in a small plant. The small plant can overcome this difficulty by confining its energies to the production of higher priced products, which carry a larger margin of profit, such as a low or medium-priced face brick.

This phase of the clay industry has been sadly neglected, and if the small plants of the state will only turn their attention to the production and development of this product, it will be a question of only a comparatively short time until there will be few frame dwellings built and the dream of the brickmaker will come true. In this connection I want to urge upon this association the necessity for concerted action and effort in educating the public as to the merits of brick and kindred products for building purposes, and I believe that the brick manufacturers of this association should establish a Bureau of Publicity for this purpose. There is no question in my mind but that money judiciously spent in this direction would yield handsome returns.

Specialization Profitable.

Another line which might be taken up to advantage by the small plant is the development of the local demand for drain tile and hollow ware. However, I would not recommend the mixing of the lines, i. e., the making of both brick and hollow ware in the same plant. This is the day of the specialist, and he who specializes in the clay manufacturing business is the man who will succeed. Brick and hollow ware are two distinct products, and the production of each is a business within itself, and requires different mechanical equipment, handling and manufacturing conditions. The hollow ware manufacturer should stick to hollow ware and not jump to brick every time there is a lull in the demand for his ware. The past season, I think, has thoroughly demonstrated the wisdom of this position. A large number of the drain tile plants in this state, finding the demand for tile somewhat limited, commenced to make brick just to keep their plants running, with the result that brick prices throughout the state were badly demoralized and no one made any money.

Another thing, when a plant is continually changing from one product to another, it is impossible to hold costs down to the minimum, for the factory is continually disorganized and every time a change is made, it takes considerable time to bring the organization down to its normal condition, and it usually means an abnormally large amount of damaged and inferior ware, with a correspondingly large loss. This naturally increases the costs and decreases the profits.

Organization and Discipline Necessary.

No manufacturing plant, whether making brick or any other line, ever made a success without proper organization in all departments. Every department should be so organized and disciplined as to fit into its niche and work in absolute harmony with all other departments. Nothing tends to disorganize a factory so much as what I shall term "spasmodic output." By this I mean crowding your machine output away beyond your drying and burning capacity one day, and falling below it the next. Nothing is ever gained by such methods, and it always results in a badly disorganized force and increased cost, through lost time, break downs, and, in many instances, a very inferior product.

In order to get the highest efficiency out of all departments of the plant, one should balance the machine output with the drying and burning capacity. For example, if the drying and burning capacity is 50,000 per day the factory should be so adjusted as to give an output of 50,000 brick in seven or eight hours steady running, thus giving a leeway of two or three hours each day to take care of unavoidable stops and when 50,000 are made, quit, but get it every day.

To a common brickmaker, the item of cost is of vital importance, and one which I believe is given comparatively little consideration. A man should know to the fraction of a cent what every department of his yard is costing.

In order to do this, it is necessary to have some sort of a cost system. It need not be elaborate, just so it is effective. If one has not the time, inclination or ability to devise such a system himself, he should hire some competent accountant to devise one for him.

Cost System Sure Cure for Price Cutting.

To illustrate the value of a cost system, I will give the experience of a friend of mine. He said he thought his brick were costing him a little less than six dollars a thousand and he based his prices upon that cost for a number of years. He finally decided to install a cost system, and the first month showed him that he had figured wrong—that his brick actually cost $6.95 per thousand and for the year the cost ranged from $6.95 to $7.30, with an average of about $7.15. For years he had sold a large part of his output at $6.50 per thousand. It did not take him long to decide to raise his prices.

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*Paper read before the recent convention of the Iowa Brick and Tile Association, Ft. Dodge, Ia.

I am quite sure that if more clay manufacturers knew what their ware was costing them there would be less price cutting and more "melons" cut at the end of the year.

The selling organization is another important department of the business. It is one thing to sell at a profit and another to just sell. Too many brick men, when they go after an order, can remember only one thing, and that is that they have the brick and simply must get rid of them at some price, no matter what.

As a rule our customers, the contractors, are not backward in trying to pit one brick man against another, and, no matter what price is named, will almost invariably say that "So and So" has made a better price, "but I would prefer to do business with you, and if you can meet his price you can have the order." Experience has taught me that this is usually a pure bluff and that holding out for a price will, nine times out of ten, land the order without a cut.

If there is anyone in the world who needs to be a "standpatter" it is the brick salesman, and a very good motto for him to adopt and follow is "stick for the last dime."

I have found that it pays to cultivate the acquaintance of my competitor, and I have usually found that after all he is a very good fellow, and not half so tricky as I have oftentimes been led to believe.

In conclusion I wish to call your attention to another problem which is of vital importance to the Iowa common brick manufacturer, and that is the question of equitable freight rates. There is no reason why the Iowa manufacturers should not enjoy freight rate conditions which will enable them to handle long hauls upon a profitable basis, the same as those of neighboring states. This condition must be brought about in order to develop the business in Iowa. The fact that outside competitors enjoy low rates which enable them to import their product into this state, thus killing the supposed freight rate protection of the small local manufacturer, leaves no reason why the small plant should wish to hinder the competition of the larger home state plants by high state freight rates.

I believe that this association as a body should take some definite action to bring about an adjustment of state and inter-state freight rates which will place the Iowa plants upon an equal footing with those of other states, and would suggest that a committee be appointed to work in conjunction with the freight rate department of the Iowa Manufacturers' Association. I believe that most of the brick manufacturers of Iowa are members of this association and Mr. Wrightman, the secretary, has said that he would be glad to co-operate with us in this matter.

TERRA COTTA MUCH USED IN CANADA.

Architectural terra cotta, by its use on the Canadian Pacific Railroad building, the tallest structure in the British Empire, has been brought into much prominence in Toronto, and the twelve floors of the new sky scraper that are already faced with terra cotta have been much admired for their architectural beauty.

Many smaller business buildings in Toronto served to show the artistic possibilities of the material, but not until it was used in the new big building were its admirable features so much appreciated.

The Canadian Pacific Railroad building is sixteen stories or 240 feet in height, of which the thirteen top stories will be faced with terra cotta. The structure displays in a remarkable way the bright splendor of the terra cotta facing, which is highly ornamented in small detail. The delicately designed panels between the window courses are art studies in themselves and the whole effect is one of ornate beauty.

The color of the facing is a light cream, varying but little in tone, the façades being designed more with an eye to effectiveness through mild ornamentation than through high coloring.

It is impossible to say how much the use of terra cotta will increase in Toronto. Although it has only been employed architecturally there for two or three years its merits are fast being recognized and its use in the newest and largest building point to the fact that it is gaining universal favor.

WITHSTOOD THE FLAMES.

As an example of the indestructibility of brick, it is interesting to note that when Coney Island's Dreamland Park burned in May, 1911, the only structures undestroyed were two brick beef roasters built of enamel brick made by the American Enamel Brick & Tile Co., New York City. The accompanying illustration shows one of these roasters in active service.

Brick "Beef Roaster" Only Structure Undestroyed In Big Coney Island Fire.

Good as New.

Old brick are in demand for new buildings and if they can not be obtained the appearance of age as given by various treatments of new brick is very desirable. Recently a wealthy Long Island man purchased the brick from an old colonial house at Grove Hill, Botecourt, Virginia, and has directed that it be sent to his Long Island estate, where it will be used in the construction of a handsome home. Grove Hill, one of the first old homes in Virginia, was burned several years ago, but the brick are in an excellent state of preservation, having been little damaged by the flames, and the purchaser of them regards himself as lucky in having the opportunity to secure them for his new home.

HOW BRICK IS SOLD BY SPECIAL DISPLAY

Two Up-to-Date Dealers Cast Aside Old-Fashioned Methods and Resort to Original Ones in Selling Their Wares

THE rapid strides in progress, in every branch and phase of the clay industry, which has marked the past ten years is indicated in no other so clearly as in the method of displaying wares for sale.

Formerly, a heterogenous pile of dusty and disreputable looking brick, tile and sewer pipe in a corner of the office, was apologetically displayed by the dealer. This obsolete, behind-the-times method has given way and dealers now point with pardonable pride to pleasing displays, arranged in a manner to show all the meritorious and attractive features of the ware. Some dealers devote an entire room to wall displays of the most elaborate character, including built-in mantels, grates, etc. These exhibits make it a pleasure to the architect or builder to select face brick, terra cotta, floor and wall tile and all accessories and enables him to see just what effect the finished wall will have, when laid with various colors of panying illustrations show several effective methods of bonds with raked out joints, headers, etc. The accom- arranging such displays.

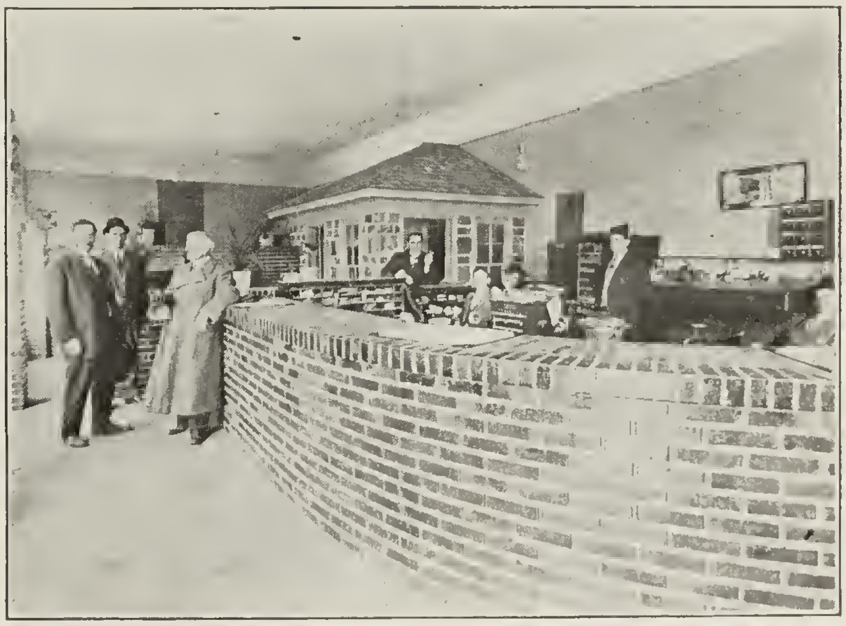
Brick Display in Offices of F. T. Crowe & Co., Building Supply Dealers, Portland, Ore. In the Rear, is a Mantel Made of "Tapestry" Brick.

Attractive Brick Display in Office of the Golden Fairview Pressed Brick Co., Denver, Colo.

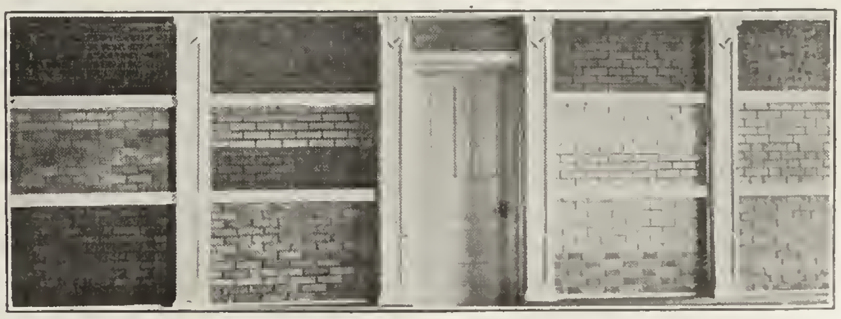
A visit to the offices of the Twin City Brick Co., on the tenth floor of the Lumber Exchange building, Minneapolis, Minn., has proven a revelation to many architects on account of the splendid display of brick shown there in a number of wall panels of many different shades and styles of brick. Pressed brick, interlocking tile and face brick of various kinds are displayed, making a total of 150 varieties offered for inspection, laid up in a variety of styles with different kinds of mortar and bonds. One of the most attractive features of the exhibit is a complete fireplace of brick with all the latest hardware accessories.

Exhibit of the Twin City Brick Co., St. Paul, Minn. Makes Selection of Brick a Pleasure to the Architect.

One of the most unique and novel brick dislays we have seen is that of the American Fire Brick Company, 16 Washington St., Spokane, Wash. The counter is made of salt-glazed paving brick, the garden wall is of "Turkish brick," while the house in the rear is constructed of Dennison hollow interlocking wall tile. This company is now making block and fire brick shapes for the new International Portland Cement Co.'s new plant which is being built near Spokane by the Fuller Engineering Co.



Unique Showing of Brick in Offices of American Fire Brick Co., Spokane, Washington.



Neatly Arranged Wall Panel in Offices of Twin City Brick Co., Minneapolis.

CERAMICS AT THE UNIVERSITY OF PITTSBURGH

By Henry Leighton

WITH Pittsburg as the center of an enormous ceramic industry, including the East Liverpool district, Beaver, Pa., Kittanning, and many other smaller districts, which, combined, give Ohio first place and Pennsylvania second place in annual output of clay products, it seems natural that the University of Pittsburgh among its new activities should feel called upon to support a deparment of ceramics.

In Pittsburgh itself are manufactured fire brick, stiff-mud and soft-mud brick, encaustic tile, fireproofing, and glass pots, while within easy reach by train are large, well equipped plants manufacturing paving brick, sewer pipe, floor and wall tile, china, stoneware, dry press brick, and other products.

The ceramic department is connected with the School of Mines, and occupies a portion of the new School of Mines building at Grant boulevard and Baynard street in the Schenley district. The laboratories are equipped with a Henry Martin jaw crusher, grinders and a porcelain ball mill for grinding the raw materials, with elutriating apparatus, petrographic microscopes, sieves, scales, etc., for preliminary examinations, and with a Tinius Olsen cement-testing machine for determining the tensile strength of the dry clay briquettes.

For the burning of the wares there are available a small electric muffle furnace, a large gas-fired kiln with a capacity of eighteen cubic feet and several smaller gas and coke-fired muffle furnaces; while there is soon to be installed an electric furnace for high temperature work.

Electric power is used in running the crusher, ball mill, blower for kilns, etc., and natural gas is used as the main fuel.

Apparatus for the ordinary chemical analysis of clay and pottery materials is available, while for special analytical work, the university chemical laboratories can be used. The engineering laboratories are also available for testing the strength of clay products. They are equipped with machines for tension, compression, torsion, and flexure tests, and with cement-testing apparatus.

The course offered for the degree of ceramic engineer is planned in such a way as to give a student a broad engineering training, and for the first two years is very similar to the courses outlined for all the engineering students. It includes higher mathematics, advanced courses in chemistry, mechanics, electricity, machine and foundry practice, the elements of mining and metallurgy, surveying, etc. In the last two years the real work in ceramics is undertaken, and the student studies the methods of clay investigation, the occurrence, properties, distribution of clay, and in the methods of manufacture, calculates and mixes glaze and body formulas and molds and fashions clayware. During the senior year, opportunity is given for a student to specialize along some definite branch of ceramic work, such as refractories and white ware.

Special arrangements can be made to accommodate men of age and experience who wish to undertake lines of study, but do not care for a complete course. After graduation the student may enter various fields of activity. He may follow the industrial side, and work toward a superintendency or managerial position; he may become a consulting engineer, locating suitable deposits, designing plants, kilns, dryers, etc.; or he may enter some branch or state or federal survey, or take up the teaching of ceramics.

The practical side, however, is kept constantly in view, and frequent visits are made to the various clay plants, and their designs and processes of manufcture studied. With the co-operation of the manufacturers it is hoped the men can be placed in ceramic works during their summer vacation, and thus afford them opportunity for acquiring that much needed experience obtained only in the "University of Hard Knocks," as the practical work has been called.

They hope to aid the practical man in the solving of some of the knotty problems now confronting him, as well as to turn out men who can "stick" and "make good" in industrial work. Hard-working, clear-headed men are wanted, and keen-witted, practical-technical men among the alumni.

The ceramic schools of the country are turning out a good product, very few "seconds" and no "bats." This institution hopes to co-operate with sister institutions and bring about a closer union between the practical man and the technical ceramic engineer.

NEW CANADIAN CLAY ENTERPRISE.

Quebec Capitalists Planning Establishment of an Extensive Plant on St. Lawrence River.

The Citadel Brick & Paving Block Co., Ltd., was recently organized at Quebec and the company bids fair to secure a place in the foremost ranks of Quebec's enterprises. The company is capitalized at $700,000 and the purpose is to establish a plant for the manufacture of high grade brick, block, tile, fireproofing, vitrified conduit, electric conduit, drain pipe, etc., and it has secured a charter to operate in the Province of Quebec. The plant will be situated about one mile below Montmorency Falls where the company has secured a frontage of more than 1,800 ft. on the St. Lawrence River, where barges can be loaded directly from the yards. The main line of the Quebec Railway, Light, Heat & Power Co. runs through the property and the cars can be loaded conveniently from kiln to cars. The material to be used in the product consists of a gray shale that forms a hill from 100 to 150 ft. in height the entire length of the property. The shale, which has been tested in laboratories in the United States, England and Germany, has proved wonderfully adapted to the manufacture of brick and other clay products. The principal products will be paving block, vitrified conduit and vitrified brick.

Mr. Otto Pommer, a graduate of the Kerannie College, Laeban, Germany, who has been a successful manager of brick plants for twelve years in Germany and for the past five years in the United States, has been secured as superintendent. The company has opened offices in the Auditorium Building, Quebec. The officers of the company are: President, Hon. S. N. Parent; vice-president, Geo. B. Ramsey; directors, Ed. Slade, Wm. M. Macpherson, Arthur Laurant, J. E. A. Bubuc and H. M. Price.

The Far West Clay Co. is now comfortably located in its suite of offices in the Tacoma building, Tacoma. This firm is working 35 men at its factory, and at the present time is running to capacity. A recent contract for hollow partition tile was that of the new dormitory of the Reed Institute in Portland.

TAKES BRICK AND COAL FROM SAME PIT

Tennessee Company Gets Double Product, Utilizing Shale for Fancy Facing Brick and Marketing the Fuel

THE little mining town of Oliver Springs, Tenn., is about 25 miles west of Knoxville, on the Southern R. R. and L. & N. R. R. About a half mile northwest of the little mining town of Oliver Springs, Tenn., almost hidden in the beautiful foothills of the mountains, is situated a most modern plant, manufacturing a high grade of facing brick, and operating under the title of the Oliver Springs Coal & Clay Co.

The stock in the company is owned by Muncie, Indiana, and Atlanta, Ga., capitalists—men who have all made a success in their respective lines of business. About eighteen months ago, these gentlemen became interested in a vast deposit of shale and coal, and with the business conservatism for which they are noted, they installed a very small brick plant, simply to demonstrate the possibilities of the shale. The results have been most gratifying, in fact, exceeding the most sanguine expectations of all parties interested. The product was well received by architects, contractors and others and it became apparent that a ready market existed for a fine quality of face brick and soon the company were in a position to carry stock, and fill orders promptly.

Entrance to Coal Mine at Oliver Springs Plant.

Showing Method of Clay Hauling at Oliver Springs Plant.

During the past year of 1911, many thousands of dollars were expended in remodeling the plant and last fall it was put in operation.

The power plant equipment consists of Atlas boilers, a 125-h. p. engine, dynamo, pumps, etc., and the brickmaking equipment consists of a 4-mold Grath dry press, a 9 ft. Eagle dry pan, an American Clay Machinery Co. steamer and the necessary elevators, screen, mixer, etc.

The shale, which is mined from a hill immediately in the rear of the factory, is extremely hard and difficult to crush, until after long weathering. After months of storage, the material is pulverized, screened, mixed and finally delivered in a powder, the consistency of meal, to the four-mold brick press, where it is compressed in steel molds, each brick receiving an estimated pressure of 25 tons. The brick thus made, having sharp edges and corners, and perfect faces, are carried direct to the kilns, where they are set for burning, coke being used for watersmoking, and coal for burning.

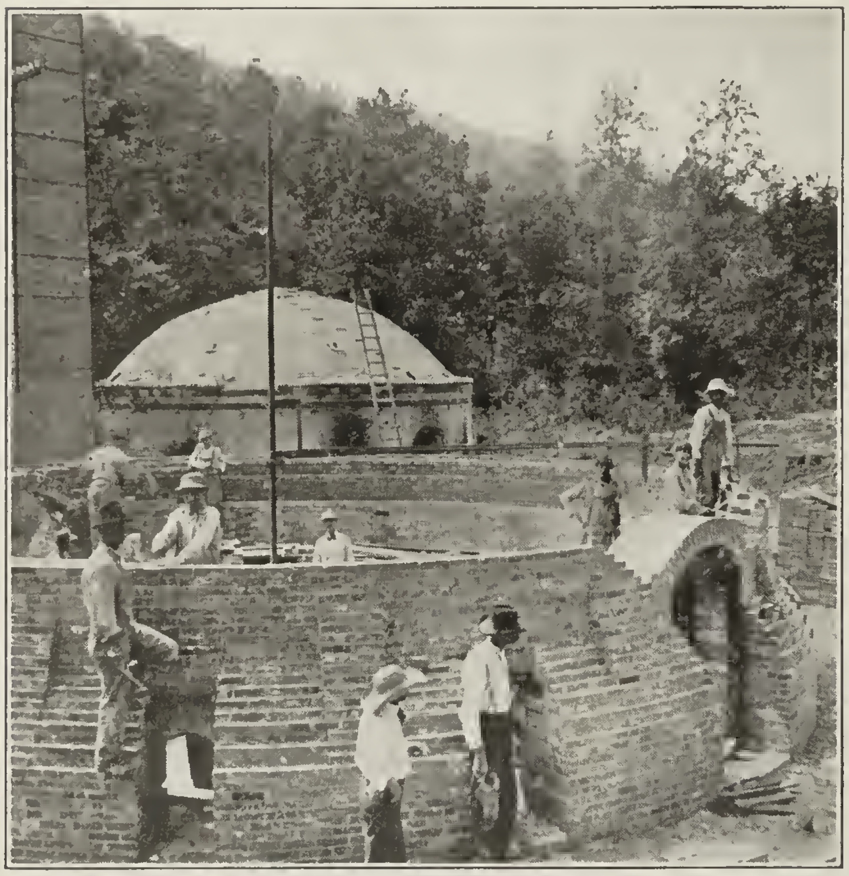
The coal used is mined with the shale from the company's mine, and if of a fine quality, being free from sulphur and other objectionable properties. The company is now planning additional improvements in the way of coal tipples, screens, etc., as it proposes to market the larger size coal. This coal overlaying the shale represents a very valuable asset to the company, in fact, it was this extremely high grade of coal, which first interested the members of the company in the property.

The kiln battery at present consists of but five downdraft kilns. Two of them having recently been built from blue prints furnished by the Manufacturers' Equipment Co. of Dayton, O., which company has also furnished much other equipment for the plant. The kilns are 30 ft. in diameter and are of particularly heavy construction, the walls being buttressed, all bands being above the door arches. The results secured with these kilns have been most satisfactory, and two additional kilns of the same type and size are now being figured upon, so the plant can be operated to its full capacity of 20,000 high grade face brick daily.

Owing to the refractory character of the material, and the fact that the product is vitrified, great heat is necessary to properly burn the brick, and strong kilns, capable of standing the consequent strain are necessary, hence the installation of kilns of the "Goldner" type.

When taken from the kilns, the brick are graded, according to color, gray, buff and flashed, and piled in the stock sheds ready for shipment, where they present a very handsome appearance and architects and others visiting the works, can easily judge of the artistic color effects possible by various combinations of the different shades of brick manufactured by the company.

The Park Street Methodist Church, Atlanta, Ga. is a much admired building for which the Oliver Springs Co. furnished 100,000 flashed brick. Similar brick were used to face the $35,000 residences of Mr. G. B. Adair of the same city—the latter building being conceded one of the handsomest in Atlanta.



Kiln in Course of Construction at Plant of the Oliver Springs Coal & Clay Co.

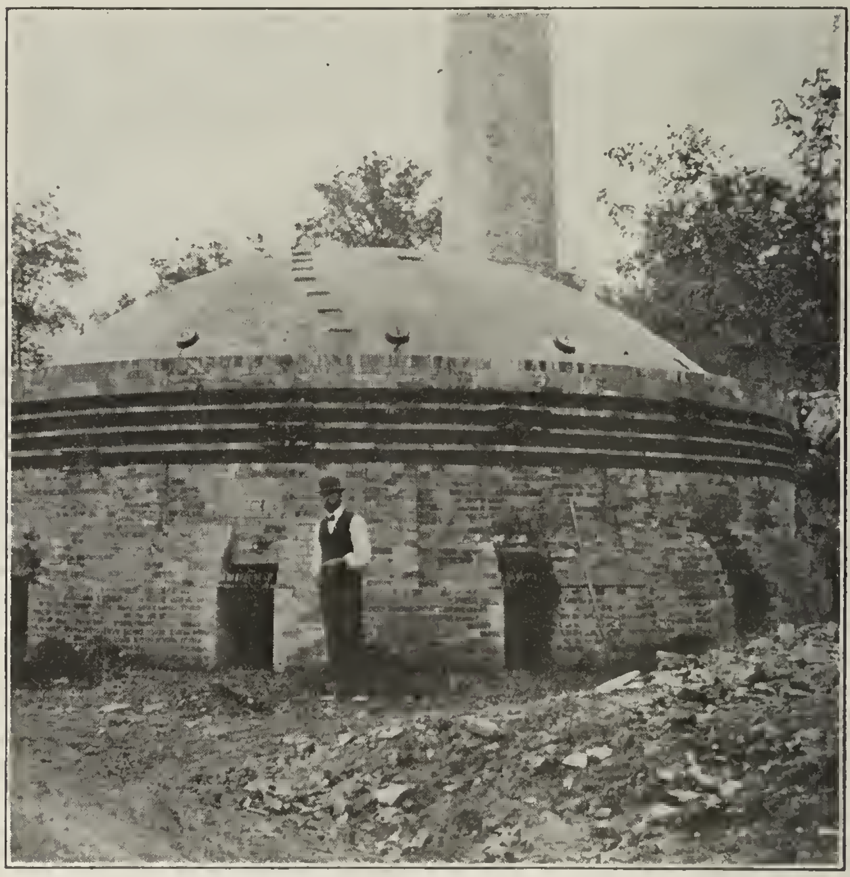
The Oliver Springs Coal & Clay Co., having but recently remodeled its plant, and has so far not advertised its products extensively, and consequently many Tennessee architects and builders have yet to learn that the necessity for shipments of such goods to be ordered from north of the Ohio river no longer exists, as they can secure face brick, equal in color and quality near at hand, thereby effecting a considerable saving in freight rates. Mr. Downing, secretary and treasurer and a large stockholder of the company, is eminently fitted for the position he holds, having had considerable clayworking experience in connection with the paving brick industry in Ohio. He is a gentleman of pleasing personality, and visitors to the plant find him ever willing to extend every courtesy. With such able management we predict a very successful future for the company. The plant was remodeled by H. & B. Copping of Waterford, N. Y.

Stock Shed at Oliver Springs Plant.

NEWLAND ANNOUNCES SOME NEW PROCESSES.

Says He Has Discovered How to Make a Weather-Proof Face Brick for House Building.

G. Ryland Newland, expert clay analyst and chemist, of Trenton, N. J., has succeeded in getting a process for making weather-proof face brick which is perfectly sanitary because of its water-proof and weather-proof qualities. A house built of this kind of brick always will be dry in the dampest kind of weather, according to Mr. Newland, and it is impossible for the face to wear off. This discovery means a great advance in the manufacturing of brick.



Finished Kiln Ready for Use.

Mr. Newland also announces the discovery of processes for making black end brick and red end brick which never will wear off, he says. These brick are in great demand but the supply is limited.

Mr. Newland has invented a readjustable machine which, it is said, makes terra cotta block in almost any size, style or design that is wanted, much cheaper, quicker and better than they have heretofore been made.

Strike On at Peoria, Ill.

After an attempt, which has continued for the past six weeks, to obtain a raise in wages, and which proved unin the three brick yards in East Peoria, Ill., went on a strike July 11. The brickyard hands have been receiving from 18½ cents to 20 cents an hour for ten hours' work, and they demand 25 cents per hour. The teamsters demand an increase of 25 cents per 1,000 for hauling. The strike affects 100 men in the yards and twenty-five teamsters.

CONVENIENTLY ARRANGED IOWA FACE BRICK PLANT

General View of the Plant of the Haskins Impervious Face Brick Co., Sergeant Bluff, Ia.

IOWA FACE BRICK PLANT.

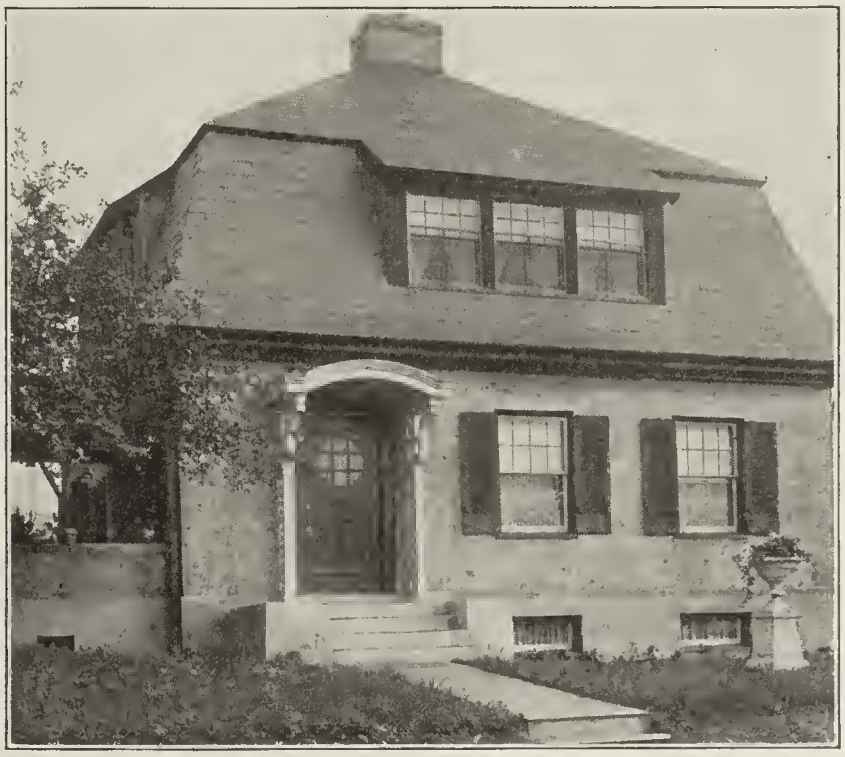
New Plant, Recently Erected, is Modernly Equipped for Building Material and Sewer Pipe.

One of the busiest of the Iowa plants is that of the Haskins Impervious Pressed Brick Co., whose plant is located at Sergeant Bluff and offices at Sioux City, Iowa. The product of the plant is rough-mottled and iron spot face brick. The company was recently incorporated at $200,000 and it deals in sewer pipe and building materials. The plant, which is shown in the accompanying illustration, is well equipped with three high pressure Kewanee boilers, 66x18 ft., one 150 h. p. Atlas engine, Brewer tile machine, Chambers brick machine with capacity of 125,000 in ten hours, one Frost and one Eagle dry pan, one Dunlap screen, four Raven presses, one Chambers pug mill, a twelve-tunnel steam dryer with a capacity of 100,000 in ten hours, one 14 Chambers continuous kiln, five Updike kilns with a capacity of 400,000 each. The company owns 166 acres of shale land and a clay bank 150 ft. deep with 8 ft. of refuse on top. The company has already sold 1,500,000 face brick this season. In setting the kilns the brick are set 65 high, and average about 95 per cent No. 1 face brick. The officers of the company are L. J. Haskins, president; I. G. Morgan, vice president; G. P. Mahoney, secretary, and J. C. Lockin, treasurer. A branch office is also maintained in the Weir Building, Omaha, Neb., and plans are being made to have one established in Kansas City, Mo.

COST OF FIRE PROOF COTTAGE.

Architect Gives Figures Showing Contract Price of Popular Bungalow Home.

We have had a number of letters from parties asking information as to the exact cost of the attractive fireproof cottage, shown in the accompanying illustration, which appeared in our May 15th issue. Mr. Henry Moeser Kropff, 709-710 Renshaw Bldg., Pittsburgh, architect, who designed the cottage has kindly given us the following figures as to the cost of the cottage.



Moderate-Cost, Fire-Proof Cottage Built of Natco Tile, Made by the National Fire Proofing Co.

"General contract price $4,550; Plumbing, $410; Heating, $135; Wiring, $75. Total cost, complete, $5,170. This does not include the architect's commission or screens, blinds, or papering.

"In the interior, the living room, has a beam ceiling and wood wainscot. The dining room has a built-in china closet and plate shelf. The floors are quarter-sawed oak and all the mantels are of special design which has increased the cost above the ordinary, for this class of work. The house, which was built in Pittsburgh, could be built for about 20% less in other sections of the country."

NEW PROFESSOR IN CERAMICS

Forest K. Pence Goes to Ohio State University, Taking Second Position in Ceramic Department

The Ohio State University has made a great acquisition in the person of Forrest K. Pence, at present superintendent in the American Encaustic Tile works, at Zanesville, O., the greatest manufactory in its line in the world. Mr. Pence takes the second position in the Department of Ceramic Engineering, recently made vacant by the resignation of Prof. Ross C. Purdy, who has gone into manufacturing work at Worcester, Mass.

Forrest K. Pence of Ceramic Department, University of Ohio.

Mr. Pence is a double graduate of the University, receiving the degree of B. S. (Chemistry) in 1907, and that of Ceramic Engineer in 1909. On graduation, he went at once to the Encaustic Tile Company, where he was the first University man to be given employment, and his success was therefore watched with solicitude. In a few months it was evident that he had made good and as time passed he won repeated advances in salary and responsibility. For the last two years he has had charge of the body and glaze department, in which the technical problems of manufacture particularly center, and has been highly successful with it.

Mr. Pence has been a teacher before and hence feels the importance of such a call more than a commercially trained man would do. The fact that the University cannot complete in a financial way with the tile works and other large manufacturing concerns, and that Mr. Pence makes a money sacrifice in engaging in teaching is the best evidence of his fitness for the place.

Professor Orton, the Head of the Department, is greatly elated over the acquisition of such a highly trained man fresh from a position of such commercial and technical importance and believes that it will still further strengthen the hold of his department upon the leadership in this branch of engineering education, which it has held since its establishment 1894.

The work in quantitative chemistry and the application of physical chemistry to ceramics has for three years past been in charge of assistant Professor Homer F. Staley. In recognition of his excellent work in these lines, Mr. Staley has been promoted to the rank of professor. In addition to his standing as a teacher and writer in general ceramic subjects, Professor Staley is widely known as one of the country's foremost experts in the enameling of iron. In addition, he is this year fulfilling important duties as editor of the Transactions of the American Ceramic Society.

The work in ceramic drawing and designing is under Mr. Carl B. Harrop. Mr. Harrop gives part of his time only to university work. He is the manager of the Ceramic Supply & Construction Co., of Columbus, Ohio, and his direct connection with large ceramic engineering projects makes him of especial value in keeping this part of the Ceramic Department up to date.

FIGHT FREIGHT RATES.

Meeting of Face Brick Men Called to Provide Measures for Combating High Rates.

Since the American Face Brick Association has been organized and started off in its work, the question of concessions in freight rates on shipments of face brick will be taken up by the organization. President J. M. Adams, of Columbus, Ohio, of the Association, will likely call a meeting some time early in the winter for the purpose of discussing ways and means to start a campaign for reductions in face brick freight rates.

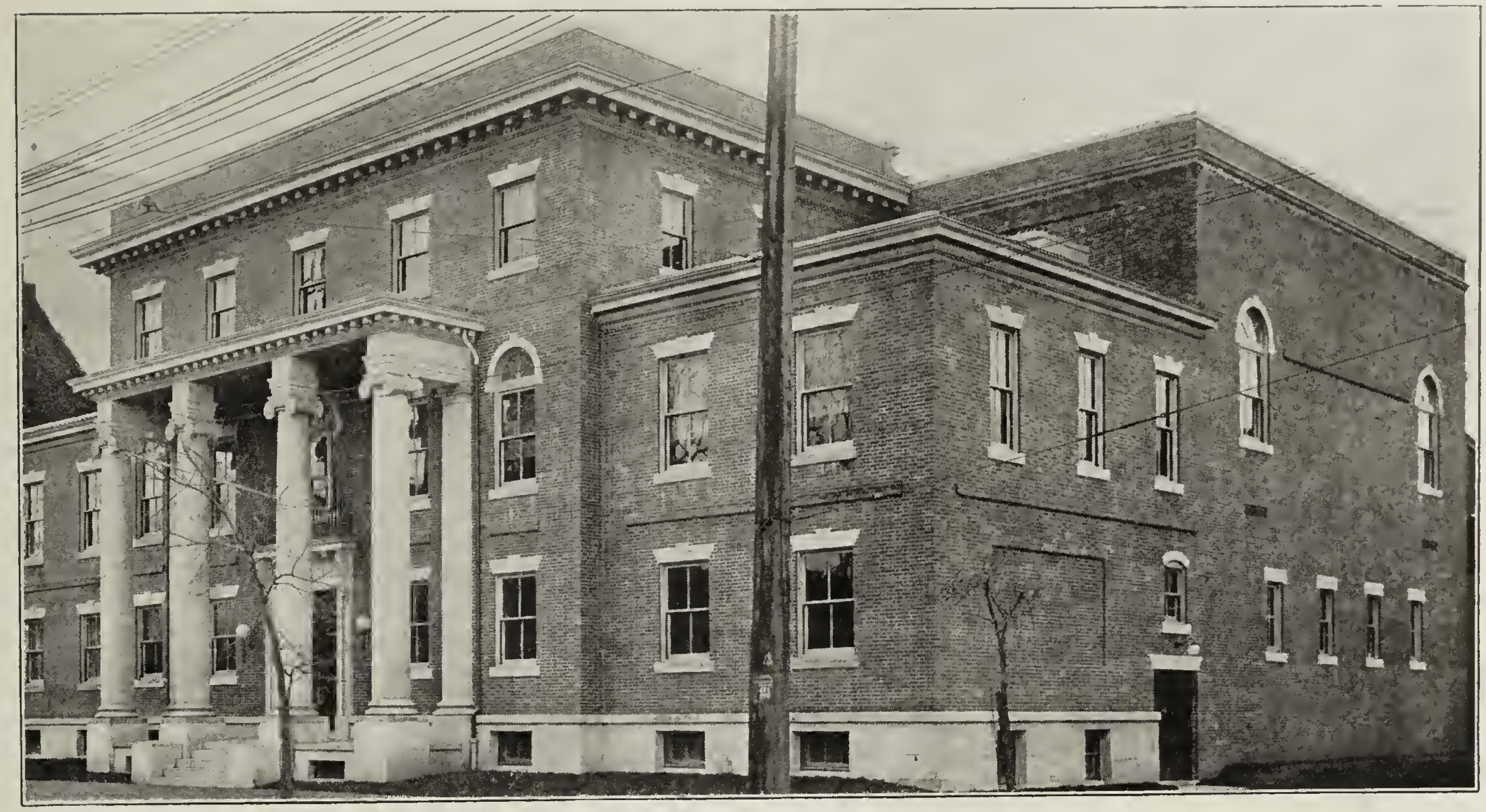
The fight to be waged by the manufacturers of face brick will require considerable funds for the employment of attorneys and expert advice and the first action of the association will be to provide these funds. Members of the organization show considerable enthusiasm in the new association and it is believed the movement to combat high freight rates will receive support in every section where face brick are manufactured.

There is a good demand in Central Ohio for face brick and many of the plants are being operated to full capacity and are unable to fill the orders which are being booked. This is especially true of the Iron Clay Brick Co. of Columbus, which operates a large plant at Shawnee, Ohio, which is operated with a full force and is far behind in its orders. Shipments are not only going to points in this immediate territory, but also to points outside and even as far west as Milwaukee and Minneapolis. The outlook for the future in the face brick business is very bright in every respect.

The demand for common brick in this territory is also pretty good, although not as strong as the face brick demand. There is considerable building going on especially in the larger cities and towns and this is requiring a large number of common brick. The outlook in that department of the trade is extremely bright also.

Paving brick is another branch which is in good demand and since the municipal authorities in many towns and cities have become interested there is a lot of paving projected. Brick paving is still the favorite in cities and towns in the Buckeye State.

HANDSOME STRUCTURE MADE OF WATER-STRUCK BRICK



Masonic Temple, Cambridge, Mass., Built by W. Fillmore Co., Boston, Mass. The Brick Are of the Water-Struck Variety, Common to the Vicinity.

URGES MORE ATTENTION TO SELLING END.

R. M. Hood of Atlanta, Ga., Gives Good Advice to the Maker in Convention Address.

R. M. Hood of Atlanta, Ga., in an address before the recent convention of the National Brick Manufacturers' Association in Chicago, urged the makers to devote as much time and energy to the selling of their wares as they do in the making of them. He said:

In the last three years there has been a very keen awakening or a renaissance in the sales department, and every brick manufacturer who has been in the business twenty-five years will agree with me, that there are two sides to the brick business—the manufacturing side and the sales side. That manufacturer, who, with one manager or superintendent, expects that superintendent to make a success of the sales side and the manufacturing side makes a mistake. The superintendent of the manufacturing side must devote all of his time to the manufacturing of the daily output. The manager of the sales side must devote his time to the sales of the brick.

Not only do we ship nowadays to a radius of fifty miles, but to thousands of miles, so the sales end of the business is as important as the manufacturing. Then comes the side of publicity and advertising brick, for after you have attracted the attention or created the desire for the brick, then there must come in the man who shall directly consummate the sale. The person selling these brick, or the person putting brick in the pavement is just occupying an opposite position to the anarchist, who is destructive in everything he does, because every brick that goes into a building or a street improves the locality, therefore it is constructive.

Every man in the manufacturing and sales side of the brick business can feel he is in a business that is constructive, and he must feel proud of the fact that he is a producer, for he is taking ten cents' worth of dirt and by means of proper machinery and proper methods of drying and burning, creating a constructive material worth many times the original material.

Gentlemen, the brick business of today is just reaching a new plane. If I did not believe that I would not have entered it four years ago. I have tried to apply to the brick business all of the ideals that I abandoned when my professor told me by virtue of loss of my health that I could not pursue scholastic work. I have tried to apply to the brick business these basic principles of success such would be applied in a professional career. I believe there is a glorious future for the brick business.

We must put the same enthusiasm behind brick as others have put behind concrete construction, for we know they overstepped the mark and got into types of construction they were not justified to enter, and it will take them years o overcome their mistakes. We need have no fear in putting up our good, impervious brick, pushing its face to the forefront and saying, "There is nature's best building product." We need not be ashamed of our business; we need not be ashamed of our work. When you can take ten cents' worth of clay and convert it into $20 worth of product, that is genius. In our Southland that eclipses anything we have done in the last century. Harness up the best enterprising young salesman you can get hold of and put him to work.

The brick business which keeps the proprietor's nose to the grind stone for ten hours a day at the plant and three to four hours more at night "on the books," should return big profits for money and time invested. Does it? If not, where is the trouble? Perhaps the prices are too low. If so, why not raise them?

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. AUGUST 1, 1912 No. 3

TRADE OUTLOOK.

Reports from leading trade centers in various parts of the country are almost, without exception, uniformly satisfactory. In many sections, an increased demand for burned clay materials is noted and there are many indications of an active fall trade in building circles. In addition to the stimulating effects of the favorable weather and encouraging crop reports, there seems to be an increase in business confidence. The growing demand for brick paved country highways has toned up the paving brick market and fireproof codes adopted by many cities provide for the extensive use of fireproofing. We are told there is every likelihood that there will be a rush for drain tile this fall and extensive building plans in all parts of the country have produced a call for face and common brick which has cleaned up many overstocked yards, so that taken as a whole, conditions could not be much more satisfactory.

FIRE LOSS IN THE UNITED STATES.

During the first two months of 1912 the reported fire loss in the United States and Canada exceeded $64,000,000. With the exception of the Chicago, Boston, Baltimore and San Francisco conflagrations, this furnishes the greatest fire loss in two consecutive months in the history of the country. Investigation of the subject shows that at least one-third of this loss is caused by carelessness or, as it is sometimes termed, "taking chances." If the year is completed at the same rate, the total loss will amount to $380,000,000, which is far greater than that for any year excepting 1906, which witnessed the San Francisco conflagration. It should be remembered that this loss is not more than half the total taxes levied (and collected) by the fire demon. The balance represents the cost of upkeep of our fire departments and the cost of placing insurance.

During the eleven years from 1901 to 1911 inclusive, new buildings in the United States to the extent of approximately $5,100,000,000 were constructed. This represents the largest amount of construction in any period of equal duration in any country on the face of the globe. During the same period the total loss from fire, including both buildings and contents, amounted to $2,484,000,000, or 48.2 per cent of the value of new buildings constructed. The percentage throughout this period varied from 32.7 in 1909, with a record of $625,000,000 construction, to 68.5 per cent in 1904, the date of the Baltimore fire, and 82.9 in 1906, when the San Francisco conflagration occurred. If we assume the usual proportion in these fires of half building and half contents, it is evident that during the period under review we burned up one-fourth of all the building value which we erected. If our fires had been on the same relative basis as is usual throughout western Europe, our total fire loss over this period would have been reduced to approximately $300,000,000, and the total cost of fire, including both loss and the upkeep of fire-fighting appliances, would probably have been less than $600,000,000.—Exchange.

CANADA HAS A BOOM.

Business is booming in Canada. The Canadian Minister of the Interior announces that in April the seven principal cities in the Dominion showed an average gain in building of 100 per cent, a rise in bank clearings of 62 per cent, and an increase in Customs receipts of 84 per cent, as compared with the corresponding month last year. Among important works to be carried out is a clay products factory, to cost $500,000.

Striking evidence of the rapid rate at which these Canadian cities are expanding is furnished in the values of the building permits granted in the last two or three years. In 1908 the total for Vancouver was, in round figures, $6,000,000; last year it was $17,360,000. For Winnipeg the corresponding figures are $5,500,000, and $17,850,000; for Calgary, $1,000,000 and $12,700,000; for Regina, $515,000 and $5,085,000; and for Saskatoon, $1,115,000 and $4,025,000.

Much of this growth represents the expansion of industrial enterprise.

A movement is under way in England seeking to make agreements with labor unions equally binding by the deposit of a money guarantee to insure the observance of any agreement which may be entered into for the purpose of ending a strike.

CHOOSE YOUR HELP.

Why put up with an incompetent foreman, engineer or burner? There are doubtless many experienced workmen throughout the country who are ready to step into the place. Many of them read "Brick and Clay Record" and by putting an ad in the "Help Wanted" columns of our Classified Ad Department, you can have your choice of the best the country affords.

An advertiser in our last issue has already received thirty-six replies. Follow his example if you want results. You will get in touch with the best class of workers—the ones you want. Rates $2.00 per inch for space.

FIRE PREVENTION IN CITIES.

In a recent address dealing with methods for combating the stupendous wastes due to fire, Franklin H. Wentworth, secretary of the National Fire Protection Association, offered some excellent suggestions regarding a solution of the conflagration problem. Some extracts from his address are as follows:

"There is one way to solve this conflagration problem—not absolutely, but at least relatively. In the heart of nearly every city there are streets crossing at right angles, along which for a very considerable distance are buildings of brick, stone and concrete. Looked at upon the map this shows a more or less complete Maltese cross of buildings which are not wooden, and which operate to divide the wooden-built district into quarter sections, and which might hold a fire in any one of these sections if they were equipped to do so. These brick and stone buildings are ordinarily valueless as fire-stops because their windows are of thin glass and their window frames of wood. The small city that will trace out its Maltese cross of such buildings and equip them with metal window frames and wired glass will immediately possess the equivalent of substantial fire walls crossing at right angles in its center, dividing it into four sections.

"Having thus fortified city buildings one against the other, extensive fires within individual structures can be prevented by the use of the now well established automatic sprinkler system. With our window openings protected and our buildings equipped with such extinguishers, the conflagration hazard in mercantile districts will be eliminated. There will then remain for consideration our immense residence districts constructed almost wholly of wood surrounding the mercantile centers, like fagots around a funeral pyre. We can lessen the loss here by the abolition of the use of wooden shingles. Burning shingles can be carried great distances by the wind or draft of a conflagration ,and when they alight in their turn upon other dry shingles they make fearful havoc. It will not be necessary to remove all shingle roofs immediately. An effective city ordinance might require all roofs constructed in the future to be of incombustible material, and that all roofs which shall hereafter require repair to the extent of one-third of their area shall be eplaced with incombustible roofs."

PERSEVERANCE WINS.

Of all work that produces results, nine-tenths must be drudgery. There is no work, from the highest to the lowest, which can be done well by any man who is unwilling to make that sacrifice. Part of the very nobility of the devotion of the true workman to his work consists in the fact that a man is not daunted by finding that drudgery must be done; and no man can really succeed in any walk of life without a good deal of what is called, in ordinary English, pluck. That is the condition of all success—and there is nothing which so truly repays itself as this very perseverance against weariness.—"Intellectual Life."

Duluth is trying to standardize paving material, instead of having as many varieties as the preferences of the individual property owner may make. The demand for uniformity is largely because of the street grades of the city. Asphalt and similar smooth materials are to be discredited because of their slippery surface. Brick, of course, is to be favored, as it should, not only because of its adaptability to steep grades, but because of its general serviceability and durability.

LETTERS FROM OUR READERS

Being the Individual Expression of Subscribers on Various Subjects of Interest to Those in the Brick and Clay Product Field

An Invaluable Aid.

Editor "Brick and Clay Record": I do not see how I could possibly get along without your journal, and hold my position. I could not suggest any improvements in "Brick and Clay Record," and I certainly could not ask for more for any dollar than I have received in the past year. I am no hog, if I am in the clay industry. I never appreciated the value of your journal so much until recently, when I was called upon to correct defects and give advice as to improvements to be made in an old established plant that could not keep abreast with the present progress of its competitors. After spending some time looking over the situation and noting the absence of many conveniences found in most up-to-date plants, I had occasion to ask for the catalog of one of the foremost clayworking machinery concerns and was advised that they did not have the catalog, whereupon I stated I could probably get the information I wanted from "Brick and Clay Record" if they could furnish me a few of the back numbers. To my surprise, they replied that they did not have it—in fact, had never taken a clayworking journal of any kind. This was evidently in line with their customary policy and was, without doubt, one of the causes of their failure to keep up with rival concerns.

I wish you continued success and prosperity.

Occoquan, Va. Geo. A. Deardorff, Supt.,
Brickmaking Dept., D. C. Workhouse.

Anxious for Another Show.

Editor "Brick and Clay Record."—General business conditions are good in this locality. The year 1912 has opened up with a boom in the brick line. We are all rushed to fill our orders. While this is partly due to the season opening late, still the volume of business for the current year will far surpass 1911. Brick prices in and around St. Louis are about 25 per cent in advance of 1911.

The Excelsior Press Brick Co. increased its capital stock during the latter part of 1911 and made large extensions to its plant. We now have all modern machinery, including a system of roller conveyors for loading cars. During the month of May we were compelled to work two shifts of men to make brick enough to supply our orders. We are now contemplating installing another dry press and a small mud plant for making salmon brick and chimney block. We feel that indirectly, at least, our efforts at the Clay Show in Chicago, in March, have brought results and we anxiously await another clay show to force clay products to the front.

Delbert S. Wenzlick, Secretary,
St. Louis, Mo. Excelsior Press Brick Co.

Valuable Services Rendered.

Editor Brick and Clay Record: "We wish to thank you for many valuable services rendered through the columns of your journal and trust you will continue the 'Brick versus Concrete' battle."

Portland, Ore. J. Edw. Coleman,
Columbia Brick Wks.

MODEL ROADS TO BE SHOWN.

Biggest International Road Exposition and Congress to be Held at Atlantic City.

One of the most interesting features of the American Road Congress to be held on the Million Dollar Pier, Atlantic City, September 30 to October 5, will be the booths in which various states will exhibit models and maps of their roads and furnish information to automobilists as to the best routes and information to road builders of other states as to the manner in which the roads shown on the maps and models were constructed.

Every state in the Union is to be furnished a booth without cost. The states of New York, New Jersey, North Carolina, South Carolina, Tennessee, Illinois and Kansas have already made definite arrangements to occupy the booths set aside for their purposes. Georgia and New Hampshire are making arrangements for booths.

The American Road Congress is being held by the American Association for Highway Improvement, the American Automobile Association, and the National Association of Road Machinery and Material Manufacturers. The United States Government will exhibit all its road models and miniature electrically operated models of road machinery and stereopticon views and every state road department will be represented. The special booths in which the different states will exhibit their maps, models and their various publications, will place the Congress on a par with the biggest international exposition.

The Old Trails Committee of the Daughters of the American Revolution is making preparations for an exhibit showing the development from the old trails of the past to the boulevards of the present. The Committee expects to exhibit a prairie schooner, a stage coach of the period of 1812 and an automobile of the period of 1912. There will also be a real log cabin presided over by the D. A. R.

Fire Prevention Day.

The first International Conference and Exhibition, embracing every phase of fire prevention, fire protection and fire-fighting ever held, wil loccur October 2d to 12th, in Madison Square Garden, New York City.

October 9th is now annually set aside as Fire Prevention Day in New York State, by special proclamation of State Fire Marshal Ahearn, former Deputy Fire Chief of the New York City Fire Department, its purpose being to provide an annual day for the cleaning up and removing of fire dangers such as accumulati ns of papers, rags, etc.

At this international meeting, fireproofing building construction and all its accessories will be exhibited and the mayors of the principal cities of the United States have already appointed their fire chiefs and commissioners as

Awards will be made for new inventions of value and merit and an enthusiastic campaign of fire prevention education will be energetically waged.

Operates Rebuilt Plant.

The Continental Brick Co., of Aledo, Ill., has its big new plant in operation seven miles northeast of that city after having devoted two months to rebuilding and remodeling. The big plant has been entirely overhauled and most of it rebuilt. Eight new kilns, just one-half the number eventually to be used, have been built, each with a capacity of 60,000 brick. At present the brick machines are turning out 35,000 brick per day under the direction of the plant superintendent, John Vane, with a crew of 45 men, and this number will gradually be increased.

The machines are now running on a standard facing brick known as the "Continental" to fill contracts.

SOME WELLINGTON INSTALLATIONS.

Prosperity in Clay Industry Evidenced by Extensive Purchases of New Machinery.

The Wellington Machine Co., Wellington, O., is doing an excellent business in supplying clay plant outfits and among the orders recently filled was a new "soft-mud" Wellington combined brick plant outfit, with a daily capacity of 30,000, to Edward Armstrong, Cincinnati, O. The outfit, included an iron Quaker machine, pug mill and sander, driven from one pulley.

The Shale Products Co., Hope Bay, Pender Island, B. C., recently organized, also purchased a complete "soft-mud" outfit of the Wellington Company including a big No. 10 Monarch, combined disintegrator and smooth roll crusher, sander and other yard supplies. John Preschern, Roseburg, Ore., has just placed on his new yard at Springfield, one of the Wellington Company's No. 2 stiff-mud machines together with a cutter, elevator and other necessary equipment.

On the brickyard of John Kulp & Sons, Columbus, O., has been installed the second Duke of Wellington "soft-mud" brick machine, of the latest improved type. The Mays-Goode Co., a new company of Donald, Ore., recently purchased of the Wellington Company one of the reliable iron quaker machines with all accessories. The Cliffwood Brick Co., Cliffwood, N. J., one of the largest brick concerns in that state, has just put in operation one of the big No. 3 Wellington stiff-mud machines with automatic cutter for making hollow ware.

That State governments think well of the brick machinery built by the Wellington Company is attested by another iron quaker recently ordered for the Oregon State Penitentiary, Salem, Ore. T. J. Anderson, Springfield, Tenn., has also recently installed an iron quaker soft mud machine and equipment.

Gasoline Motor Haulage.

Clay manufacturers who have suffered annoyance occasioned by the use of mule haulage on tramways in mines and about the plant might do well to investigate the merits of gasoline motor haulage, which is specialized by the Geo. D. Whitcomb Co., Rochelle, Ill.

Especial attention has been given by the company to equipping mines with gasoline mine motors and the results have been entirely satisfactory. It was at first feared that the gases from the exhaust would prove objectionable. But this has not proven to be the case. The motors work on the return air, of which there is from 15,000 to 18,000 feet per minute on each entry, and a short distance from the motor the fumes from the exhaust are scarcely noticeable. While these motors require the same careful attention as a similar piece of machinery, the advantage of having a self-contained machine, independent of any other source of power, and ready for use at any time, with nothing to provide for it but the track, is apparent. The gasoline tanks are so placed as to be well protected in case of accident and are brought into the mine sealed and kept in that condition until after being exchanged with empty tanks on the motor. The tank can only be filled when detached from the motor and in changing it is necessary to have the valve closed, thus doing away with any chances of exposed gasoline in the mine.

Electrical engineering has become of such importance that a course in this interesting work is offered to students at the University of Illinois.

IRON WORK ON RECTANGULAR KILN.

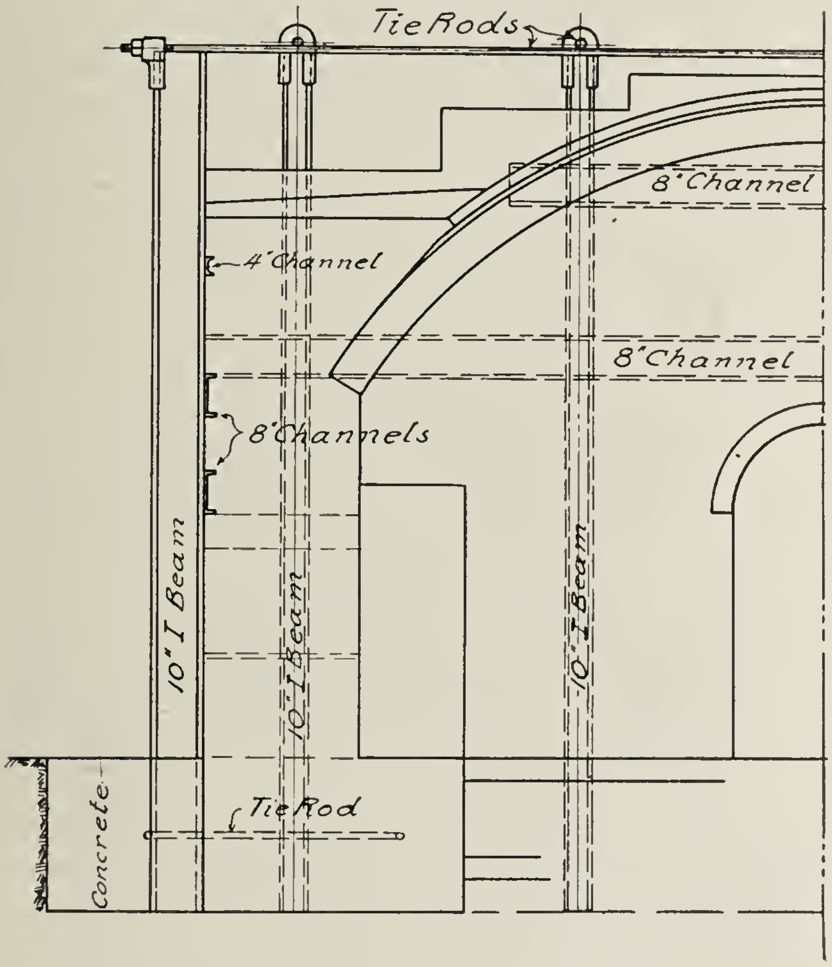
Expert Answers Pennsylvanian's Query Relative to Proper Method of "Ironing a Kiln."

"Editor 'Brick & Clay Record': I would like very much to get reliable information regarding the proper method of ironing a square kiln and if you can obtain this information for me the favor will be highly appreciated.

"The following few questions, I believe, will cover my case: What is the proper way of ironing a square kiln to get the most lasting results and what kind, weight and size iron should be used?

"What should be the maximum distance allowable between the buck-stays on the side of the kiln?

"If a square kiln is ironed as described, what will be the average life of the crown? If possible, please give detailed sketch of the proposed ironing."



Method of Bracing Rectangular Kiln.

The Answer.—"In order to hold the crown of a rectangular kiln, the best modern practice is to use a ten-inch I beam for the verticals. The weight of a standard ten-inch I beam is 25 lbs. per foot, and this weight is frequently used, but if the kiln is wide, or the crown flat (thus increasing the thrust) or if the crown is high and the heel low (thus increasing the leverage on the upper end), or if the spacing is a maximum, a heavier weight should be used, 30 lbs., 35 lbs., to 40 lbs.

"On the sides of the kiln, the spacing of the beams should not exceed eight feet and need not be less than six feet.

"The beam should lie snugly against the wall of the kiln and extend into the ground about three and one-half feet. There are three methods of anchoring the foot: One is to put a block of concrete in front of the beam to the depth of the hole and with a bearing surface against the ground of about two feet.

"Another method is to use a tie rod through the kiln under the kiln floor, but this is only applicable when the kiln bottom is shallow.

"A third method is to use a tie anchored into the kiln foundation.

"On the ends of the kiln, four I beams should be used as shown in the sketch.

"The tie rods may be one-inch round iron if the ends are upset for threading, but it is customary to use one and one-quarter-inch round iron without upsetting.

"The best fastening is a simple casting as shown in the sketch, which slips over the top of the beam and fits snugly.

"A straight rod threaded at each end can then be used, doing away with stirrups, eyes and turnbuckles.

"In the kiln wall, should be inserted at the skew level, an 8-inch standard channel to distribute the thrust from beam to beam and the joints should break on the beams.

"Sometimes it is desirable to use a similar channel above the furnaces, and also a light channel to back up the heel, but these secondary channels are seldom used.

"The ends should have two 8-inch channels—one, two or three courses above the wicket arch and a second near the top but keeping below the main crown level.

"All channels should extend the full length of the wall in which they are imbedded.

"Crowns in a kiln properly ironed do not give way through any release of the iron work, but their life depends upon the quality of the brick in the crown, and the character of the mason's work and the quality of the fire clay. If poor materials are used and they are improperly laid, the crown may last only a few months, but when properly built and protected it will last many years."

Pipe Will Not Glaze.

A superintendent of a sewer pipe plant wrote saying:

Our pipes are difficult to glaze inside when they are near the bottom of the kiln. Would it do to dip them in the glaze instead of salting in the ordinary manner? Would the salt affect any pipes that were dipped in glaze? Any hints will oblige.

The answer:

The defect is due to insufficient draft, faulty salting, or, most probably, to faulty setting. Properly set kilns should give equally good results throughout, but if the upper pipes so cover the lower ones that the salt cannot get inside them, the covered portions will, obviously, not be glazed. It is not wise to dip them in glaze, but is far preferable to have them salted throughout. If a dip is to be used, it should be as similar to a salt glaze as possible. Salting will not affect the dipped pipes to any great extent, though it may make them a little more glossy.

FOUR-STORY HOUSE ON SIXTEEN-FOOT LOT.

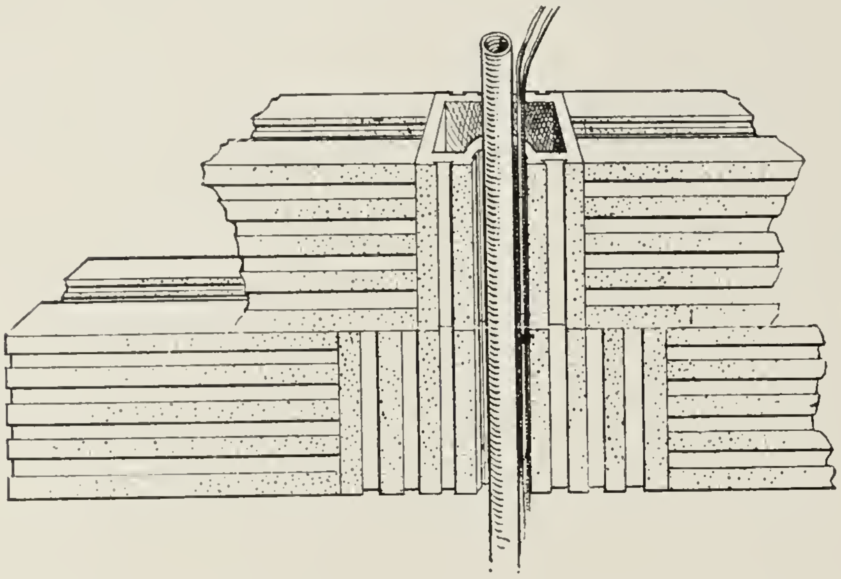
A builder in Pittsburgh, Pa., has solved the problem of utilizing a sixteen-foot lot for a comfortable ten-room house. As the house stands on a terrace almost a story above the streets, it was a simple matter to turn what would ordinarily be the basement into a combination of first floor and basement.

The building sets back thirty-four feet from the front of the lot and measures fifty-one feet, six inches in depth, and the general impression given is that of a house twenty-five feet wide. Every inch of space is utilized, the big living room on the first, or the street floor, twenty-three feet long, extends under the front porch. Similar economical arrangements for the saving of space are shown throughout the entire construction. The house has an attractive appearance and is built of cream-colored face brick with stone trimmings and slate roof.

NEW TYPE OF INTERLOCKING BLOCK.

Many Excellent Features Make Hollow Block Popular for Wall Construction, Among Architects and Builders.

Hollow tile for wall building is rapidly coming into favor among architects and builders, it having many points of excellence aside from the fact that it is cheaper and better than concrete and stone. They can be plastered on the inside or stuccoed on the outside, they make a good bond and provide a dry wall, which is ventilated both horizontally and perpendicularly. The building block, illustrated, is patented and owned by L. G. Lease, Warren Ohio. One meritorious feature of this block is that by laying the first block with the depression down and the next with the depression up, and breaking joints on top in the usual way, a continuous air space is provided from the bottom to the top of the wall. The arch in the block removes the pressure from the center of the block and puts the load on the outside wall, therefore, making a stronger wall. This block is intended for walls that can be built with an 8-inch block and is especially adapted to partitions in apartment houses, school houses and all buildings where sound is to be eliminated, at the same time shutting out the cold in winter and the heat in summer. It reduces the cost of heating to a minimum. The arches in the block are not placed opposite to each other but one above the other so that they will not interfere in the ventilation of the wall.



Showing Pipe and Wires Laid In Interlocking Block.

In another illustration is shown the provision made for gas and water pipes in the construction of the hollow tile block. These block are made in different sizes and are covered with steel lath, provision being made that the joints in the wall may be broken.

In another illustration, is shown the method of laying the block with the grooves together, making a hollow center, which is filled with cement. This method of laying the block makes a wall that will stand excessive side pressure and makes an ideal wall for barns, grain houses, factories, silos, water troughs, cisterns, etc. These tile are also useful in making poultry houses, being especially sanitary and easily kept clean, ventilation being provided so that foul air can be taken in at one side of the building and let out on the opposite side.

Seven women were hurt, one probably fatally, July 18, at Wabash, Ind., when a floor at the Wabash Canning Co.'s plant collapsed, precipitating the women into the basement. The women were engaged in stacking cans containing vegetables, prior to the stock being taken to the storage rooms, when the accident occurred.

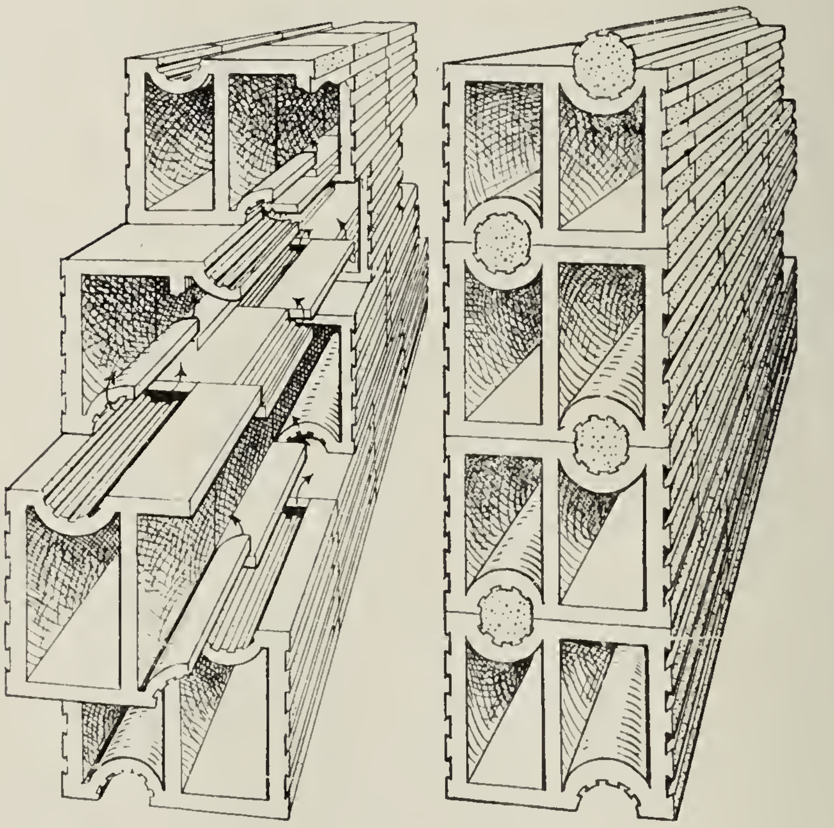
BINDING POWER OF CLAY.

Tensile Strength of Clay Depends on Plasticity and Binding Power. Rohland Explains Properties.

THE binding power of clays commonly is understood to be synonymous with their plasticity, but the two properties, although closely connected, by no means are identical. Professor Rohland, of Stuttgart, recently published an interesting article in a European journal on the subject in which he defines "binding power" as the capacity of a clay to retain its power of being shapen into objects by the usual methods of the potter, in spite of the fact that it previously has been mixed with a considerable proportion of sand and other non-plastic materials.

According to Rohland, both plasticity and binding power are due to the colloidal nature of clays, and, consequently, if the content of colloid matter is increased, the plasticity and the binding power of the clay will be increased simultaneously. At the same time, the fineness of the non-plastic material added, plays an important part. The finer it is the more of it will the clay be able to absorb. The tensile strength of the clay increases and diminishes in the same manner as the binding power, so that the one may be used to measure the other. In other words, a clay at the stage at which it has a maximum tensile strength will also have a maximum binding power.

The binding power of a clay is closely related to the colloidal matter present, that is to say, to the hydroxides of aluminium, iron, and silica in the clay in a colloidal form. These colloids have the characteristic of clays, viz., the ability to retain their physical properties, including plasticity, when mixed with neutral powders.



Two Methods of Laying Block. On Right, Groves Are Filled with Cement.

Professor Rohland regards colloidal substances as having a fine, ramified, compressible network-like structure, the non-plastic material entering into the meshes of the network without materially affecting the properties of the structure as a whole. The fact that colloids can absorb a much smaller proportion of coarse than of fine neutral powder, appears to confirm this view, as the coarse material would destroy some of the network structure and would reduce its mechanical strength.

The action of the colloidal matter present in a clay depends on the amount of water it has absorbed or can absorb, and the binding power appears to have a definite ratio to this water absorption. Alternately, the plasticity as measured by the water absorption is a measure of the binding power.

The binding power of a clay also is associated closely with a large shrinkage, and the latter is connected with the colloidal matter present, shrinkage being an important property of colloids which have absorbed water, and have then been allowed to dry.

Glue or gelatine, for instance, is a typical colloid, and when placed in water it swells greatly. The swollen mass shrinks when the absorbed water is dried out of it.

In the manufacture of firebrick and other refractory goods, it is necessary to form a product which will resist the heat and also the abrasive and corrosive action of dust and fire-gases. To produce a dense ware it is necessary that the mass should have a high shrinkage, but it would then crack and spall unduly. Non-plastic material must, therefore, be added, and in order that the product may have sufficient strength, a clay of high binding power must be used. As these properties are due, according to Rohland, to the colloidal matter present, it follows that a determination of the colloidal matter should serve as a measure both of plasticity and binding power. The simplest means yet found for this purpose consists in determining the amount of malachite green dye absorbed by a clay, and when this method of testing has been improved, it will, if Rohland is correct, be of inestimable service in the investigation of clays.

FULLER'S EARTH IN 1911.

We frequently are asked for information on the extent of the production and consumption of Fuller's earth, therefore, we believe the following report given out by the U. S. Geological Survey, will be of interest to clay manufacturers:

"Fuller's earth, the claylike material that is used principally as a filtering medium for oils, fats, and greases, is found in fifteen states, as shown by a report of the United States Geological Survey on the 'Production of Fuller's Earth in 1911." now going through the press. In 1911 Fuller's earth was produced in but seven states, Arkansas, California, Florida, Georgia, Massachusetts, South Carolina, and Texas, and there were no unusual developments in the industry. New deposits are reported from time to time, but in many the high standard of efficiency required is not found and only a few of the deposits are worked. Of the large number of known deposits but 13 were worked in 1911. Some of the causes for the small number of workings, in addition to the high standard of quality required, are inaccessibility of the deposits and lack of capital.

Greatest Year in History of the Industry.

"Notwithstanding the comparatively small number of producers, the output has almost steadily increased from the small beginning in 1895, when but 6,900 short tons were reported, valued at $41,400, or $6 a ton, to 1911, when 40,697 tons were reported, valued at $383,124, or $9.41 a ton. The prospects for 1912, the report states, appear to be bright and the production for this year will probably exceed that of 1911. A number of deposits which were being exploited in 1911 will be producers in 1912.

"The production for 1911 was 7,875 short tons, or 24 per cent greater than the output of 1910, and it was valued at $89,415, an increase of 30 per cent. This is 21 per cent greater than the production and 27 per cent greater than the value reported for 1909—the maximum output and value until 1911. The highest average price per ton—$9.41—was also attained in 1911; the lowest—$5.72—was in 1904.

"The imports of Fuller's earth were also the largest ever recorded both in quantity (18,224 short tons) and in value ($143,594), so that the consumption of Fuller's earth was 58,921 short tons, valued at $526,718. Of this the domestic production represented 69 per cent of the quantity and 73 per cent of the value.

Persistent Advertising Pays.

In a recent isue of a California newspaper we noted an attractive ad of the Fresno Brick & Tile Co., of Fresno, Calif. This and other similar ads in local papers have brought most satisfactory results to the company. In a recent letter, the Fresno Brick & Tile Co. stated that they had been spending considerable money in local newspaper advertising and were exceedingly well pleased with the business secured therefrom, and that while their competitors believe the increase in business was due purely to favorable business conditions, they believe that it is in a large measure due to their persistent advertising carried on during the past twelve months. This company has orders on its books that will keep it busy for the next four months, which has not been the case for many seasons past.

Toot! Toot! Toot! Toot! Toot! Toot!

Toot! Toot! Toot! Toot! Toot! Toot! Toot! Toot! Toot!

Where Is That Fire?

There Were Twenty-Three Fires During Four Days of Last Week.

Don't Worry Build Your Home of Brick

Fresno Brick and Tile Co.

E. M. Prescott, Manager

Factory
California and Cedar

Office
H and Mono Sts.

Toot! Toot! Toot! Toot! Toot! Toot! Toot! Toot! Toot!

Toot! Toot! Toot! Toot! Toot! Toot!

LEGAL DECISIONS.

Important Legislation Applicable to Manufacturers, Dealers and Shippers of Clay Products.

Importance of Acceptance of Orders.—The question of when an order taken by a traveling salesman is accepted, the Court of Appeals of Kentucky says, in Courtney, Etc., vs. E. W. Curd & Son, 134 Southwestern Reporter, 146, is not without importance. Until it is accepted it may be countermanded by the buyer. When it is once accepted, and the buyer's right to countermand is at an end, the seller cannot revoke the acceptance without the consent of the buyer. The general holding is that, if the seller does not formally accept the order, it is subject to countermand, until it is accepted by the shipment of the goods, but that it cannot be countermanded after the goods are shipped. In determining what is an acceptance where there is nothing in the conduct of the parties to show an acceptance in fact of the order, it is a safe and sound rule that the words of the writing shall be taken in their plain, ordinary, and popular sense, and that they should not be strained to express a meaning they do not naturally convey. Under that rule the mere sending of a postal card saying: "Your order of (giving date) to our (giving name) is at hand and will receive our prompt and careful attention. Thanking you for same, and hoping to merit your future favors, we are, Yours truly," does not constitute an acceptance.

Liability for Wrongful Acts of Employes.—The general rule, the Supreme Court of Pennsylvania says, in Marcus vs. Gimbel Bros., 80 Atlantic Reporter, 75, is that an employer is liable for the wrongful acts of his employe done in the course of his employment and within the general scope of his authority. The presence or absence of the employer when the wrongful act is committed, and whether it is done with or without direct authority, does not affect the question of liability to the party injured, if the act complained of was done in the performance of the duties for which the employe was engaged. If, on the other hand, the wrongful act resulting in the injury was done by the employe outside of his employment and not in pursuance therof, but in order to gratify the ill will or malice of the employe, the employer is not liable, although the employe may at the time be in his employment. Whether an employe acts within or without the scope of his authority depends upon the facts in each particular case.

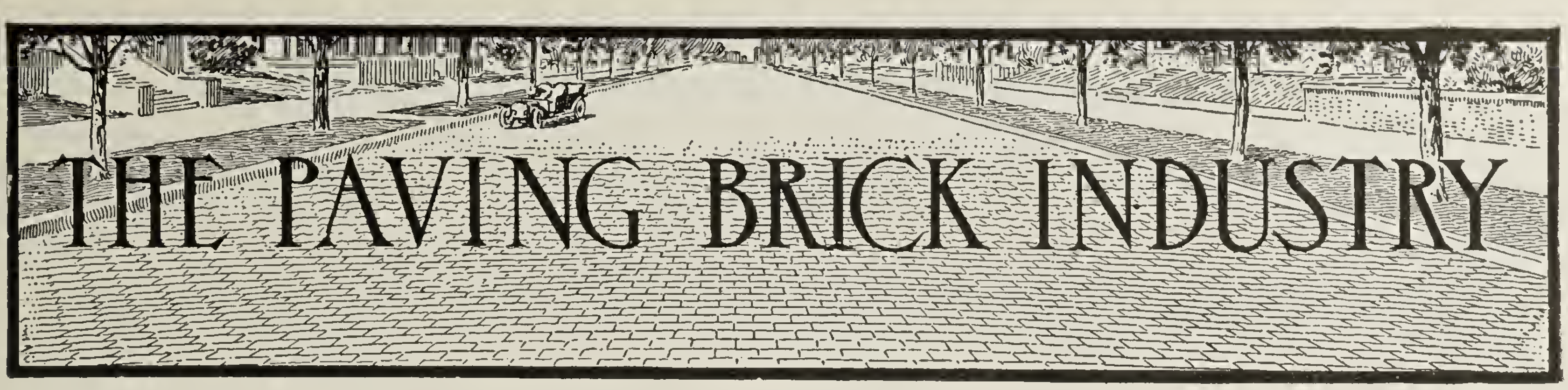
Duty of Employers in Furnishing Appliances.—An employer, the Supreme Court of Minnesota holds, in La Doucre vs. Nichel, 131 Northwestern Reporter, 852, is liable for an injury caused to an employe by an unnecessarily dangerous appliance knowingly and intentionally furnished to such employe by a foreman authorized to furnish appliances. It is the duty of an employer to exercise due or ordinary care in furnishing instrumentalities for an employe to work with, to the end that such instrumentalities may be reasonably safe for such use. Whether he performs such duty in person or intrusts it to an employe, he is alike chargeable for an injury which results to an employe through the failure to exercise such care. It is immaterial whether a lack of ordinary care in the discharge of this duty arises from the carelessness or the merry mood of the person charged with the performance of the duty.

What Constitutes a Partnership.—It is not practicable, the Supreme Court of Minnesota says, in T. E. Foley Co. vs. McKinley, 131 Northwestern Reporter, 316, to frame an exact and comprehensive definition of a partnership, for there can be no rigid test applicable to all cases. But it may be said in a general way that a partnership is a contract between two or more parties to combine their capital, labor, and skill, or some or all of them, in a business in which they are to have a community of interest, as principals, for the purpose of joint profits.

Trade and Other Name Rights in Business.—The Court of Appeals of Kentucky says that the right to the use of any word or figure as a part of a trade-name or trademark or indicia of one's business is not an absolute right, but a qualified one—a privilege that must be exercised with due regard to the rights of others, as property rights are enjoyed. The use of descriptive terms and generic names in business is limited to a truthful use, and, where such names or terms have become identified in the minds of the public with one's business, the use of such terms and words by another, in a manner calculated to deceive the public by passing off his goods as and for the goods of another, cannot be justified. This rule has been extended to the extent that one may not even use his own name in connection with or as a part of a business or trade name so as to pirate upon the good will or reputation of a business rival by inducing the public to believe that his goods are those of his rival. A man has the right to the use of his own name in connection with his business, but he must use it honestly and fairly, with a due and just regard for the rights of any other person of the same name who may be engaged in a similar business. The use of geographical terms is governed by the same rule as that governing the use of personal names. These terms, being indicative of localities, cities, or countries, are the common property of all living there, and cannot be exclusively appropriated by any one. All coming within the scope of the territorial limit of such geographical name may lawfully and truthfully use it in connection with their business. A tradename does not have to be identical with that of another in order to justify a court in denying its use because calculated to produce unfair competition. It is sufficient if it is so similar to the earlier adopted trade-name as to make it likely that ordinary and unsuspecting persons—prospective purchasers—would be led to believe that it was the same. The question of similarity or resemblance between two trade-names is a question of fact that must be determined by the evidence in each particular case. It is not necessary to show that any one has actually been misled by reason of the similarity in names. It is sufficient that the name selected is so similar to that used by its competitor as to likely produce deception. In all cases of this character the intent to deceive is the essence of the offense, and the very fact that a trade-mark or trade-name is adopted that is so similar to that used by another is a circumstance calculated to raise a presumption that it was adopted for the purpose of deceiving the public to the injury of its competitor.—Newport, Etc., Co. vs. Monarch, Etc., Co., 137 Southwestern Reporter, 784.

New Technical Periodical Wants Authors.

"Steam Machinery," a monthly magazine of men, machinery and methods, intended especially for the lumberman, the contractor, the railroad-builder and the clay excavator, will commence publication before the end of this year. Contributions of a technical or amusing nature are invited on anything pertaining to the above. Accepted articles will be paid for immediately after publication. The magazine will be edited, for the Clyde Iron Works of Duluth, Minn., by Charles H. Mackintosh, to whom all articles should be submitted.



THE PAVING BRICK INDUSTRY

NEWSPAPER MAN SPEAKS FOR BRICK.

In an address at a banquet given by the Hartford (Conn.) Business Men's Association, John C. Seitz, business manager of the "New York World," spoke as follows regarding the good roads question:

The nations and states that have become great are those that have expedited transportation by public methods. New York was made by the wise De Witt Clinton, who did it by digging the Erie Canal. The Cumberland road made the great Middle West. Rome made itself master of the world by good road building and Napoleon dominated Europe as much by paving highways as by arms. Without the former the latter meant little. He met his smashup in Russia and Spain, where the walking was bad. We have in this day of motor carriages a means of escaping from railway and steamboat oppression. The highway law of Connecticut is most liberal. The sum appropriated is large. The result is rotten. Why do not the enormous sums spent by this state accomplish something? You know they do not. Instead of permanent highways we have only a permanent highway commissioner.

The fine old piece of Scotch granite who holds that job defies public opinion and continues to waste our money in his purblind way, not because he is wicked, but because he is foolish. In his fifteen years of office holding he has made himself more powerful than the Legislature, mightier than the governor, superior to the press. His is the hand that disburses the money taken from the public by taxation, and which is fed back to that public in inefficient driblets to keep his political fences straight—not to build roads that will stand the needs of modern traffic, and free us from railroad domination. Two years ago, I, with other responsible citizens of Greenwich, went with Commissioner MacDonald before Governor Weeks to lay down what the governor called a "sound business proposition." Briefly we proposed to build the first link of what should become an Appian Way across Connecticut, that would accommodate traffic and endure. We pledged Greenwich to pay $50,000, the trolley company $60,000, and we asked the state to contribute $50,000, to the end that some three miles of brick highway forty feet in width should be constructed to the Stamford line. Here is a road on which often more than 1,000 autos per day enter this state of Connecticut.

Makes "Whimpering" Apology.

It was rejected. The governor wriggled uncomfortably. He was plainly in terror of the commissioner, afraid of a fellow public servant. "I know you bring a sound business proposition, gentlemen, but you must see how it is. You know every town in this state has two members of the Legislature. Now the commissioner has to go to the Legislature for his money, and if he was to give $50,000 to one town, and that a big one like Greenwich, the little towns would resent it, and it would tend to injure the commissioner with the Legislature." This was his whimpering apology for turning down "a sound business proposition."

What followed? Instead of our forty foot brick highway we have a wretched strip of macadam, sixteen feet wide, four and a half inches deep, laid on mud and even now disintegrating under the spring rains and so dangerous it must be nightly marked with red lanterns. It took fifteen months to build this worthless bit of makeshift, during which time nearly ten miles of good town roads have been torn to pieces by the rushing wheels of the myriads of automobiles, while the public inconvenience cannot be measured in cash. We were denied access to the specifications for this delectable piece of road building, and it required an act of the Legislature to teach this autocrat manners and another one to remedy his blunders so that he could complete it at all. Instead of the trolley paying $60,000 toward a decent road, by this last act the state will have to pay for shifting its tracks, and I shall not be surprised if when the full bill is paid, the $22,000 on the original contract, the extras and the cost of shifting the tracks, it will come close to the $50,000 we originally asked for, and there will be no road in six months from now, but some of the grades will be easier for the consolidated trolleys!

What we want is a brick highway forty feet wide, laid on a concrete base, curbed and guttered, from Byram Bridge to Windsor Locks, with a branch from New Haven to New London. This board of trade should combine with every board of trade along the route and force it through. It can be done, and it can be done without new law, without begging legislative favors, and almost, I was going to say, without a new commissioner. Think what such a highway would mean for the betterment and prosperity of the state. Figure the streams of traffic that would flow over this mighty road. From what I know of Connecticut the inhabitants are capable of taking something away from every one who passes through. Freight, express, passengers, all these interests would be served by the motor traffic made possible by such a road. The towns off the line would benefit in their turn. Their beauties would be discovered, the abandoned farms would be reclaimed, the hills would be sought by the pleasure seekers and the state become richer, greater and a more fit abiding place for men.

So, gentlemen, get together. There are plenty of boards of trade. They have strong, if indifferent, membership. Let us rouse this state to build a fine, wide boulevard and get the thing started. The state could readily build ten miles a year out of present funds by curtailing ineffective work. Once well under way, towns would rally with special appropriations to help out. I believe that in five years the whole plan could be carried out. Then the state would have a great property, freedom from monopoly and a lessening of the taxation that now vanishes in dust and profanity.

CONVICTS BUILD ROADS.

Colorado has become famous in the past few years on account of its highly perfected roads, which is largely attributable to the fact that of the 800 prisoners in the penetentiary, half of them have been working on the roads for the past four years. It is figured that in the last two years these convicts have given Colorado roads that are worth $212,000 and which cost the state only $56,000. Getting down to actual cost, it is stated that the cost of maintenance per day per man figures from 30 to 36 cents and in return for that expenditure the state gets labor that would cost at least $3.00 a day. In two years 400 miles of boulevards have been built, the convicts having saved the state $500,000.

T. J. Tyman, warden of the Colorado penetentiary, who evolved the system of utilizing convict labor on the roads, uses the humanitarian policy and rules the convicts by kindness instead of loading them down with chains as is the custom in many other states where prisoners are used on the roads.

In Illinois, while convict labor has not been employed in road building to any great extent, many convicts have been engaged in crushing stone, which was given free by the state to townships building roads. At least 25 of Illinois' prisoners are engaged in this labor.

A little order fills its niche and serves its purpose as completely as a big one.

THE PERFECT PAVEMENT.

Under the above title the Metropolitan Paving Brick Co., Canton, O., in an attractive and interesting booklet, discourses upon the superiority of brick paving. We quote from it, as follows:

"Of the various materials used for street paving only one—vitrified brick—has increased in value and efficiency in its manufacture within the last fifteen years. Nearly every other material, perhaps, excepting stone, shows no marked improvement over similar materials laid 20 to 25 years ago. Stone pavements are relatively, of course, of the same value. With improved machinery and added knowledge, gained by experience, brick has gradually advanced until today it is conceded to be in the first rank of all the paving materials now in general use. Ten to fifteen years ago asphalt was regarded as the general standard, but the tremendous expense involved in renewing and repairing the surfaces of asphalt roadways, has made the burden of taxation so excessive in many cities, that investigations conducted by experts, have demonstrated that a brick of first quality made in block size, and laid under modern and substantial methods, makes the cost for a long term of years less than one half the net cost of asphalt laid on all the American streets.

"Wood block twenty years ago was considered an ideal pavement. It has gradually and generally been abandoned in the east and is fast disappearing in the west, on account of the demand for a pavement that should sufficiently resist heavy traffic for a period of at least twenty-five years. Brick, when of the right character, has therefore come to be the standard whenever durability and permanency of service are demanded. It is conceded that, with long experience in manufacturing the modern brick pavement, the period of life stated will generally be exceeded, for brick pavements laid 12 to 16 years ago, of proper material, imperfectly formed, of irregular character, laid without very much regard to foundation, without under surface drainage, with ragged edges and filled with sand, are today doing admirable service without a suggestion from the municipal authorities that they ought to be relaid. This is fully demonstrated in Cleveland and many other cities."

CITY PURCHASES RATTLER.

As a result of an unpleasant experience, the city of Chanute, Kansas, has purchased a rattler. It is said a paving brick manufacturer took advantage of the fact that the city had no rattler and shipped faulty brick. The authorities becoming suspicious had samples submitted to the rattler test and the outcome of the matter was that all objectionable brick were replaced and it is fair to assume that the city will secure a good brick street instead of one that in a few years would become an eyesore and a detriment to the paving brick industry. A prominent manufacturer in discussing the affair said. "It is to the interest of all makers of paving brick to see that none but the best brick are laid.

"We believe," he said, "that brick is better than any other paving when good blocks are used. If inferior material is furnished, brick paving is made to seem a failure. Because this has been the case in some instances, cities have discontinued the use of brick, thus affecting the entire industry."

TWENTY YEARS OLD IN GOOD CONDITION.

Rochester, N. Y. appears to have tried most all kinds of pavements and Edwin A. Fisher, city engineer of Rochester, speaks of his experience with brick pavements as follows:—"A good brick pavement, properly laid, has proven satisfactory for many streets and such pavements laid in Rochester on business streets have stood up in good condition seven or eight years, requiring renewal in ten. The same pavement on a residential street lasted twenty years and is in good condition and bids fair to last ten years more. The objection to brick on account of noise is lost since the advent of automobiles and other rubber tired vehicles which take the place of those with the old fashioned noisy steel tires. Creosote wooden block while desirable for some localities is rendered slippery in wet weather and is expensive to install."

THIS COUNTY IS PROUD OF BRICK ROADS.

Erie county, New York, is the most important in the state in the matter of road maintenance, according to H. K. Bishop, first deputy highway commissioner. Westchester county, with its roads leading into New York, is the next, but it does not concern the commission so much because the city takes care of the main roads.

Erie county has nearly 200 miles of state roads, a considerable portion of which have been paved with brick. Mr. Bishop considers that brick paving is peculiarly adapted to the roads about Buffalo because of the heavy traffic.

While the initial cost is greater than macadam or asphalt macadam, Mr. Bishop believes it will be economical in the long run. Macadam roads, he explains, will stand up well under light usage, but it is another proposition where heavy wagon and automobile traffic is concerned. The automobile alone would not wear macadam greatly. In fact, by applying an oil coating they tend to pack the road, but when the wheels of wagons and the calks of horses' shoes loosen the covering the auto traffic tends to whip off the surface.—Towanda, Pa., Review.

NEWS OF THE PAVING WORLD.

The paving commission of Baltimore, Md., has given out contracts for the paving of a number of streets and we note that vitrified brick will be used for the paving of several streets in that city.

Dallas, Tex., will improve a portion of Live Oak street, using vitrified paving block combined with concrete curbs and gutters.

City Engineer Harper, East St. Louis, Ill., has been instructed by the Board of Local Improvements to prepare plans and specifications for the recurbing and paving of Broadway street with vitrified brick. This paving is regarded as imperative as practically all of the traffic entering and leaving East St. Louis passes over this street on its way to the Eads bridge. The aggregate cost of street improvements contemplated in that city is estimated at more than $500,000.

We are advised that the Los Angeles Pressed Brick Company has not manufactured paving brick since August of last year, at which time its large paving brick plant was burned down. The plant, however, has been rebuilt and will soon be put in operation, but paving brick will be only a small part of the output as the plant has been equipped for the manufacture of sewer pipe.

The Bradford (Pa.) Pressed Brick Company recently secured the contract for six million pounds of paving block, to be used on the country roads in the State of New York and while this order is one of the largest ever placed for paving brick, and will require 250 cars for shipment, it comprises only about two per cent. of the vitrified paving block to be used on the highways of New York State during the next 18 months. Not only are many brick pavements being laid in the cities of New York State, but miles and miles of brick roadways are being built throughout the country districts.

The Rev. L. A. Carroll, of Kittanning, Pa., has come forward with a scheme to buy the Kittanning pottery plant from the Colonial Trust Co., of Pittsburgh, Pa., and place it in rate of $100 per share, and desires the banks of Kittanning to handle the money.

POTTERY NEWS

GENERAL NEWS OF THE CRAFT.

Decided Increase in Production of Stoneware—Profits Satisfactory—New Mechanical Appliances.

East Liverpool, O., July 26.—James M. Smith, president of the Shenango Pottery Co., of New Castle, Pa., through his attorney, James A. Chambers, bid in the plant of the New Castle (Pa.) China Co., at public auction recently, and secured this eight-kiln pottery plant for $23,450. After the New Castle plant has been improved it will be operated jointly and as an auxiliary plant of the Shenango China Co., thereby increasing the production and capacity of the Shenango Company. The Shenango is one of five plants in the United States manufacturing vitrified hotel and restaurant china. Mr. Smith and L. L. Curry, general manager of the Shenango went to New Castle from Columbus, Ohio, two years ago. It is said that probably 200 additional workers will be put at the benches in the recently acquired pottery during the next few months.

After several weeks idleness, the plant of the Crooksville (O.) China Co., and several other stoneware plants in that locality have resumed operations. There are four stoneware plants in the Crooksville territory which will not likely resume work until early in August. There has been a decided improvement and increase in the production of the stoneware plants in the Central Ohio territory, and the exports have also been gradually increasing. It is said that the profits in the stoneware business have been rather satisfactory during the last six months. The art potteries in this section have been operating to capacity, and sales of this line of pottery are reported to have been larger during the first six months of the year than experienced during the same period during 1911.

William Polk, a hotel owner in East Liverpool, has invented more mechanical appliances for domestic potteries during recent years than any other person. For several years, he labored perfecting a sagger-making machine, which is being used extensively in the tile plants in the Zanesville district. His next effort was a brushing machine, which is used generally in all domestic pottery plants. Then came the creation of a scouring and dipping machine which was first installed in the Homer Laughlin pottery in East Liverpool. His latest invention is a sponging machine, which will lessen losses in the bisque end of the potteries. Mr. Polk plans to turn his attention to the invention of a mechanical jogger for flat and hollow ware ere long.

The Frontier Decorating Co. of East Liverpool this season has put before the manufacturing potters a decorating machine, which takes the place of gold stampers. This is a printing machine, so to speak, but modeled on new principles. It does the work of nearly a dozen girls or stampers, and in a neater manner.

The commission appointed by the Treasury Department at Washington, which has been investigating the custom duties on French china importations has announced a reiteration of its recommendation that thereby abrogated the agreement between the United States and the Limoges (France) Chamber of Commerce governing the appraisement of pottery. Secretary of the Treasury, MacVeagh, will announce his decision later, whether or not the agreement shall be terminated September 1, as was the original plan. It is asserted that if the agreement is abrogated, another will not be negotiated, but a new and better method of appraising china importations will be worked out.

Tile of all kinds, stoneware, domestic pottery and art pottery is planned to be shown at a Ceramic Exhibition which is being fathered by the Chamber of Commerce of Zanesville, O. The date of the "show" which is a sales booming proposition, has not been announced.

The new Bohemian Art Pottery at Falls Creek, Pa., has been placed in full operation. A varied line of ceramic products are being made at this pottery.

As a result of a plank or two being inserted in the platform of the Democratic party at its recent convention at Baltimore, Md., one of the largest pottery projects contemplated in the western district in recent years has been held up indefinitely. It has become known that a town in the central part of Ohio wanted a pottery, and made a good offer to an East Liverpool concern to remove there. This was refused. However, the East Liverpool company asserted that it would build an additional plant, and with this end in view the financial part of the project was speedily arranged. Then came the Baltimore convention and the adoption of a plank which favored tariff for revenue only. This put the building of a new plant out of the running, and now the matter has been held up until after the November election.

Chattels of the Warner-Keffer China Co., are being offered for sale from time to time, and the last week has witnessed the sale of the stock of Decalcomania of this plant, which was held by Samuel B. Larkins, general manager of the National China Co., of Salineville, O., who held a chattel mortgage. There is no information obtainable at this time from attorneys interested in the matter, whether or not the company will be reorganized and the plant placed in operation.

Fred Kline, of Philadelphia, who was sales manager of the Warner-Keffer company, has been selected as general manager of the Colonial Pottery Co., of East Liverpool, succeeding William Robinson, Jr. Mr. Kline will reorganize the sales and manufacturing departments, and it is said that a new dinner shape will be placed on the market about January 1 next.

At the annual meeting of the Globe Pottery Co., held a few days ago, the following officers were elected: President, Noah A. Frederick; vice president, Jacob Shenkle; secretary, treasurer and general manager, Willard R. Morris; superintendent of clay department, Mentor Shenkle; superintendent of kiln department, Harry Horwell. Clarence H. Hauman who was formerly in the position now occupied by Mr. Morris will likely locate in the West, probably in Kansas, where he expects to assume the management of a manufacturing plant.

When F. G. Mellor, general manager of the Ford City (Pa.) plant of the Pennsylvania China Co., resigned his position recently to return to Trenton to become more actively identified with the Charles Howell Cook Pottery Co., the employes of the Ford City plant presented him with a testimonial. Mr. Mellor managed the Ford City and Kittanning potteries for six years. Besides the set of resolutions of respect which Mr. Mellor was presented with, he was also given a fine graphophone.

All electric porcelain plants in the western district, which are controlled by the American Electrical Porcelain Co., resume operations this week, after a several weeks idleness. Several plants of this company are located in the Trenton district, but the bulk of the properties are in the western territory.

Plans are developing for the erection of a fifteen-kiln plant at Chester, W. Va., by Charles A. Smith. It is reported that upwards of 500 workers will be employed, and that the new pottery will cost approximately $2,000 per kiln. Mr. Smith recently sold his holdings in the Edwin M. Knowles China Co., of Chester, and at the time it was intimated that he would soon begin the erection of a new plant.

Because of the increased demand for stone ware specialties, a large addition is being erected at the plant of the A. E. Hull Pottery Co., at Crooksville, O. New kilns are being added and additions are being made to the clay shops and warehouses.

The National Hydro-Carbon Co., of Pittsburgh, Pa., has started to remodel the plant of the American China Co., at Toronto, O., which was sold to that company a few weeks ago at receiver's sale. Pottery workers at the Toronto plant are securing employment in the Steubenville, East Liverpool and Sebring O., potteries.

The Milligan Bros. Pottery Co. has been formed at Crooksville, O., with a capital stock of $25,000. This company has bought the Clark pottery at Crooksville, and will place it in immediate operation, making specialties. H. C. and C. O. Milligan who formed the new company have been salesmen for the Roseville Art Pottery Co. for a number of years, both being young men.

Announcement has just been made that the capital stock of the Brockman Pottery Co., of Cincinnati, O., has been reduced from $75,000 to $7,500. The company manufactures semi-porcelain ware, and disposes of all its product in the vicinity of Cincinnati.

Cash compensation is now being offered by several western pottery manufacturers to their employes who submit designs which are suitable for dinner ware treatments, this being the first time the scheme has ever been worked in the west. The Smith-Phillips China Co. was the first in the field, and George Rawlins, a native of England, was successful in having two designs accepted. He received $100 per design, and now the company is having the designs patented, and they will be used for dinner ware treatments exclusively by the Smith-Phillips Company. Bonuses are also being offered the employes of this company for suggestions which will tend to make better grades of ware and which may also tend to create a greater efficiency in the pottery.

EVOLUTION IN BELTING.

Users of belting are fast coming to a realization of the fact that some substitute must be found for leather belting. This condition has been brought about by the continued increased cost of leather, and, by the fact that leather is not suitable for every use to which belting is put. Only with great expense can leather be waterproofed; there is no cement that will bind the laps when exposed to great heat.

Most substitutes for leather belting even though they have not all the drawbacks of leather, still have their own peculiar points of weakness. Of the substitutes offered, rubber has the objection of great expense; the weakness of vulcanizing when exposed to heat, and of deteriorating when exposed to oils.

The American Fabric Belting Co. of Cleveland, Ohio, manufacture a solid woven belt, which has overcome many of these weaknesses. Nestor, the trade name by which this belt is known, is a very closely and evenly woven belt, which runs true and even. It's manufacturers claim that it is so treated that it is practically unaffected by surrounding conditions, atmospheric changes, great heat, cold, oils, steam, water, dilute acids, dirt, grit etc., and that its surface is such that it clings to the pulley, without the use of dressing and may be run slack without slipping, which fact means a great saving in wear and tear on machinery. In the process of manufacture, this belting is stretched and set so that when put on the pulleys, there remains but little slack to be taken out. Its users state that it will not shrink, even under the most severe conditions.

There is no one belt that is the best belt for every purpose and Nestor belting is no exception to that rule. For use on flanged or cone pulleys, it is not recommended; but for drives and general transmission purposes, elevators and conveyors, it has proven by long and severe tests to be very successful. For bucket elevator use, we are told, there are instances where Nestor belting has been in service for years without a shut down for repairs or to take out stretch.

There continues to be some unrest in labor circles, the strike in the Peoria, Ill., yards being the most serious.

EFFECTS SAVING OF FUEL.

Many users of the Raymond metallic radiation dryers and the Raymond gas fired continuous kilns are loud in their praise, owing to the large saving effected in the amount of coal used. The following is one of many unsolicited letters of commendation received by the Raymond Co. in regard to the above:

Knoxville, Tenn., June 10, 1912.

The C. W. Raymond Co., Dayton Ohio:

The writer recently had occasion to call at the plant of the Knoxville Brick Co., where is installed a 16-track Raymond metallic radiation dryer, as well as a 15-chamber Raymond producer gas fired continuous kiln. The product manufactured is end cut brick, and after having an extended conversation with Mr. Reagan, manager, relative to the saving brought about by both dryer and kiln, he made the statement that since the installation of the two pieces of apparatus, the entire amount of coal consumed in their plant is somewhat less than one-half ton per thousand brick, and the amount of fuel consumed per thousand brick before the installation of both the kiln and dryer ran somewhat over a ton.

We find that the temperature at which they are burning is about 2,200 degrees F. (very high indeed for red burning clays), at which temperature the average amount of coal required in a periodical kiln runs from 1,200 to 1,500 lbs. per thousand brick.

He further stated that the approximate amount of coal consumed in the kiln itself was 500 lbs. per thousand brick burned, and upon asking him as to the percentage of first-grade brick produced in the kiln, he stated, 'We are now burning 100 per cent hard brick,' which remarkable statement was evidenced by the writer's observation in several chambers being unloaded, also by the absence of any bats or soft brick on the yards.

Very truly yours, R. H. McELROY.

"THE OLD WAY AND THE NEW."

Under the above title the Bonnot Company are issuing an attractive booklet describing their various brick machines. The following is an excerpt from the first page: "Brick machinery is no longer in the 'horse car' stage. It has advanced far beyond that condition and the demands each year are becoming more exacting, so that machinery builders have been compelled to devote considerable attention to improving their product to meet the requirements." The booklet shows a number of auger machines made by the Bonnot Co. ranging in capacity from 20,000 to 125,000 daily. Those desiring a copy of the book may secure same by addressing the Bonnot Company, Canton, O.

Referee E. R. Meyer has sanctioned the sale of the property of the Fultonham Brick Co. of near Fultonham, Ohio, to the Kirschner Construction Co. of Cincinnati, Ohio, at $9,000 with an additional $1,500 for the brick on hand. The first bid of the Kirschner Company was $6,000.

MICHIGAN CONCERN OPERATES EXTENSIVELY.

The Saginaw Sand Stone Brick Co., located at Saginaw, W. S. Michigan, has changed it's firm name to the Saginaw Brick Co., and has increased its capital from $25,000 to $50,000. The additional capital is to be used in doubling the capacity of the plant and adding other improvements. The company has recently installed a large engine and a new press and also lengthened out three of the old hardening cylinders, which with one new one gives the plant a capacity of 55,000 to 60,000 brick per day.

Last year the company purchased the sand from 120 acres west of the city and is shipping in sand from that place to mix with that which is procured near the plant, thus giving a much better product. The concern reports that the outlook for business is very good for this plant and they have every prospect of keeping it running to full capacity throughout the season.

The Grand Rapids plant of this company is also doing an excellent business, and has already booked a large amount of orders for this season's business. The Kalamazoo plant is turning out over 25,000 brick per day with very good prospects.

The plant at Jackson, Mich, which this company purchased last year is being moved to Rives Junction north of Jackson on a 40-acre piece of land on which the sand is especially fine, making an excellent product. The location of this plant affords excellent shipping facilities, enabling the company to get into the Lansing and Jackson markets.

The Michigan City plant, which was also acquired last year, will be rebuilt and rehabilitated this month. After considerable experimenting the company has decided to put in wet pans at both the Jackson and Michigan City plants, with a rotary table press and the simplified system of hydration. It is expected these two plants will be in running order and ready to deliver brick by the first of July.

SAND LIME BRICK AND MORTAR.

It has been urged on several occasions that mortar will not hold sand-lime brick as tenaciously as those made of clay. This is one of those matters which can only be determined by experiment, and it is, therefore, important that the results of some tests by H. Burchartz, which were given in a lecture by him before the German Sand-lime Brickmakers' Association, should be made known in this country. These results were summarized by the lecturer himself as follows: "On collecting the results of all the experiments and tests it will be seen that lime mortar behaves precisely the same in buildings erected of sand-lime brick as in those constructed of other brick, so that the long-continued discussion on this subject may now be brought to a definite close."—Brick and Pottery Trades Journal.

SAND LIME NOTES.

The Silica Brick & Tile Co., with offices at Watertown, N. Y., will rebuild the buildings which were recently burned at their plant at Calcium, five miles from Watertown. The product of this plant is sand-lime brick and the officers are Oliver Watson, president; W. H. Gardner, secretary and treasurer. The company is capitalized at $75,000.

NEW CANADIAN SAND LIME PLANTS.

The Canada Brick Co., Ltd., is a newly incorporated concern which is building two plants in the vicinity of Montreal at Mile End and St. Lambert, which will have a total annual output of 15,000,000 sand lime brick. It is stated that with the use of Berg presses the company will be able to produce sand lime brick at $7.00 per thousand, and as the present price of these brick in Montreal is $18.00 per thousand, a wide margin of profit is shown. The directors of this company include some of the best known business men in Montreal, among them being: C. H. Cahan, H. A. Lovett, F. Loomis, G. F. Gyles and A. G. Cameron.

BIG COMPANY DISPOSES OF HOLDINGS.

Michigan Sand Lime Company Enters Into Machinery Manufacturing Business.

The American Sandstone Brick Machinery Co., which introduced the industry for making brick from sand and lime into this country, and has been installing complete sand lime brick plants in the United States and Canada under the American process, has disposed of its business consisting of rights, good will, patents, etc., to the Jackson & Church Co., of Saginaw, Michigan, which company will continue the business in the United States, Mexico and South America, having opened an office in Buenos Ayres, Argentina, Calle de Tacuari 538. This company has just finished installing a complete twelve million-per-year plant for the South Michigan Brick Co., Kalamazoo, Michigan, a two-press plant for the Alsip Sandstone Brick Co., Edmonton, Alberta and rebuilding the North Indiana Brick Co.'s plant, formerly the U. S. Brick Corporation of Michigan City, Ind., and the plant at Rives Junction, Mich., of the Jackson-Lansing Brick Co., formerly the Jackson Pressed Brick Co. of Jackson, Mich.

THRIVING CONCERN.

The Gary Granite, Brick & Stone Co., of Highland, Ind., is producing an excellent quality of sand-lime brick. The present capacity of the plant is 20,000 a day, but will be increased shortly to 30,000 by the addition of a new two-mould press of the Chicago Brick Machine Co.'s make.

The plant has operated to capacity for more than 300 days without a single mishap. They have on hand more than a million brick made during the winter, all of which are covered by orders, and the company has advance orders enough to keep the plant running to full capacity for many months to come.

The man who possesses special knowledge, whether technical or practical, of the clay business, stands a better show to pick the plums than the man who has to depend on "cut and try" methods.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

J. C. Melcher, of O'Quinn, Texas, writes that there is an inexhaustible supply of mineral clay near that city which is drawing invalids by the hundreds from the surrounding country who declare they find wonderful healing qualities about the deposit. No charge is made for the clay and the afflicted cart away all they wish free of charge.

E. H. Goodrich, who has been connected with the Mack Manufacturing Company, of Philadelphia, has resigned his position.

The plant of the Haskins Impervious Face Brick Co., at Sergeant Bluff, Ia., is running at its full capacity, the company having on its books orders for more than two million face brick for early delivery.

Fort Gibson, Okla., is to have a large brick plant in the near future. A fine shale has been found on the property of J. T. Earnest, from which excellent brick have been made. Several parties are considering the proposition of opening a plant.

The G. M. Boyd Brick & Tile Co., of Knob Noster, Mo., resumed work at its plant a short time ago. Several machines purchased from the Federal Prison at Leavenworth, Kan., have been installed, which increased the output considerably.

The Keays & Maxim Brick Co.'s plant at Madera, Cal., is operating to capacity, but so great is the local demand for the product that the plant is unable to meet it, thus necessitating the bringing in of brick from Fresno.

A brick and tile making plant is being erected at Monroe, Ore. So far the name of the company has not been given out.

There is a big demand for Saginaw, Mich., brick. The Saginaw Paving Brick Co. reports that business is more than rushing and that it has been obliged to turn down many orders lately. The firm is shipping 500,000 brick to Alma, Mich., for paving work, 225,000 to the M. C. R. R. at Detroit, and many carloads to various contractors for building purposes. The Saginaw Sandstone Brick Co. also reports a large business and there is plenty of shipping to many cities in the state.

The strike among the miners in the plants at Uhrichsville, Ohio, which has been in progress since April 20, has been ended, because the local union voted twelve to six to return to work at once. Whether the operators made any concessions to the miners has not been learned.

The Los Angeles Pressed Brick Co., Los Angeles, Cal., recently contracted to furnish 4,500,000 brick to be supplied at once to the Standard Oil Co. for use in building a new refinery at Richmond, Cal.

The first brick of the Ardmore Mfg. & Construction Co.'s plant at Ardmore, S. D., were recently turned out, marking the beginning of a new industry there.

Field Brothers, of Corvallis, Ore., are putting in new machinery for a brick plant.

The Fribley Tile Mill Co. of Bourbon, Ind., is erecting a new plant.

The Curtis Brick company, of Kankakee, Ill., broke their record for brick made in a single day recently. At the Grant Park plant they turned out 309,000 brick and at the Manteno plant 321,000, making 540,000 at both plants, which is considerable brick for eight hours.

Thomas Andrews' Sons, 521 Eleventh Street, Niagara Falls, N. Y., contractors, want to know where they can purchase hollow radial brick for chimney construction. They have two contracts under consideration which specify this material.

The Denton Press Brick Company, of Denton, Texas, has let the contract for four more big kilns, making eight built or contracted for in the past six weeks. The capacity of the plant, which is now working forty men in a shift, will be enlarged still further.

The scarcity of laborers reported some time ago by the brick yards of Berlin, Conn., still continues; conditions along this line do not improve at all.

The excessive heat of the past week is certainly working hardships to the brick makers at Dover Point, Eliot and other places in the vicinity of Portsmouth, N. H. They are unable to get the brick properly cooled off in the kilns in order to make shipments to fill the many orders which they have on hand.

C. B. Herrick, manager of the Twin Bluff plant of the National Fire Proofing Company at Ottawa, Ill., has just completed a new drying shed which is considered by clay workers as a model of perfection. The new improvement represents an expenditure of $40,000. The plant is now producing from 132 to 140 tons of building tile daily.

The Osceola Silica & Fire Brick Co. is installing a new fire clay mill in their plant at Osceola Mills, Clearfield Co., Pa.

Rochester, Minn., business men are contemplating developing newly discovered beds of green shale in their vicinity.

Cincinnati capital acquired what probably is the largest brickyard in Ohio, when James G. Fisk, O. W. Roll, Edward Harris and Herbert Doerger became owners of the Madeira Brick Company at Madeira, Ohio. The plant covers nearly 20 acres of ground and has a capacity of about 100,000 bricks a day. The new company is to be incorporated.

The Springfield (Ill.) Drain Tile Co. has begun the operation of its new plant.

The Sharon Clay Products Co. of Rose's Crossing, Ohio, planned to begin the operation of its new plant this week.

The Standard Brick & Tile Co., of Colton, Calif., has bought a site and purchased $20,000 worth of machinery for a plant to be erected. Plans are being prepared for the building and E. F. Van Luven is the secretary. The capital stock is $100,000.

R. W. McCreery, of Elgin, Tex., has leased the Lanius Pressed Brick Company's plant at Abilene, Tex., and will at once begin the operation of same. For the past few months this plant has been closed down. The plant is complete and the investment amounts to $40,000. When the plant is in running order fifty men are employed.

The Riggs Coal Products Company of Sullivan, Ind., recently incorporated for $20,000 with James R. Riggs, C. L. Davis and Felix Jones of that city as directors, has completed one of the most modern and completely equipped clay working plants in Indiana just west of Shelburn. The plant is completely equipped for making brick and tile by machinery and is now in operation.

The Chattanooga (Tenn.) Sewer Pipe and Fire Brick Company has experienced no little inconvenience on account of the recent rainy season because it has retarded the output of clay, and also hindered the loading of cars.

Hess & Son, St. Augusta, Minn., brick manufacturers, have added a down draft oval kiln and the necessary patterns for the manufacture of all kinds of hollow blocks made from clay such as are used in silos, partitions and other structural work. The improvement cost in the neighborhood of $2,000. The new kiln has been tested and the product which was turned out is very satisfactory.

All railroads traversing points in Texas are defendants in litigation pending before the Interstate Commerce Commission at St. Louis, Mo. The plaintiffs are the Evens & Howard Fire Brick Company and the Laclede-Christy Fire Clay Company of St. Louis. The St. Louis brick manufacturers claim an overcharge of $40,000, and the Interstate Commerce Commission is requested to adjudicate the controversy.

Harry Strausburger and J. C. Appich, owners of the Mound Valley Building Brick plant of Parsons, Kan., are contemplating moving to Pittsburgh, Kans. They are to merge with a new company to be incorporated at the latter place.

The Chase Foundry & Machine Co. of Columbus, Ohio, manufacturers of cars and trucks, has just issued a new catalog. It shows their complete line and is carefully arranged.

The Acme Roofing Tile Company, of Des Moines, Ia., has begun work on its new $250,000 plant on North Twentieth street. Ten acres will be occupied there by buildings and kilns alone, while many more have been purchased and leased from farmers in the vicinity of the Lehamn place and from interurban interests, for actual shale digging.

A. T. Shellenbarger, of Ravenna, Ohio, is preparing to establish a brick and tile plant.

The stockholders of the Calhoun Clay Products Co., of St. Louis, authorized the issue of $75,000 in bonds July 19, to carry out plans for the enlargement of the company's plant at Golden Eagle, Calhoun County, Illinois, so it can engage in the plastic brick industry. The company has a capital stock of $160,000 and has been in operation several years making pressed brick. C. E. Neely is the president.

The Ripley brick plant at Houghton, Mich., will resume operations after having been closed down since last season.

A newly erected brick plant at Ardmore, S. D., has started operations.

We are advised that the Falls Brick & Tile Co., Sheboygan Falls, Wis., is doing a rushing business in both brick and tile. The plant is running to its full capacity and the output is sold for some time ahead.

NEW PLANTS AND ADDITIONS.

The Salisbury Brick Co. is preparing to erect a mammoth plant at Delmar, Del. The property is now being tiled in every direction before building operations are begun.

C. A. Rogers, A. J. Flynn and G. K. Wilkin of Asbury Park, N. J., have organized the Imperial Clay Co. with a capital of $125,000.

W. W. Parry of Rome, N. Y., is contemplating opening a new plant and will need complete equipment if he does.

The American Brick Manufacturing Co. of Staunton, Del., has been reorganized with larger capital and the plant is to be enlarged.

The Corry Brick & Tile Co., of Corry, Pa., will spend $30,000 enlarging its plant. The new officers are: George H. Dunham, president; A. J. Hazeltine, secretary and treasurer, and D. Warren Rosay, general manager.

The Milton Brick Co. of Milton, Pa., recently incorporated, with Thomas M. Wilson as its manager, is preparing to erect a paving brick plant.

The Pflaltzgraff Pottery works at York, Pa., was destroyed by fire July 15. Loss, $10,000.

George H. Clippert & Bro. Brick Co. has purchased land adjoining the present plant in Springwells, Detroit, Mich., and work on the erection of a 100,000-a-day plant of the most modern equipment is soon to begin.

E. E. Witham, of Swift Current, Canada, acting as agent for James McConnell of North Dakota, has purchased land for a brick plant at Swift Current, which is to be erected this fall.

Henry C. Kleymeyer has bought land at Evansville, Ind., for a large brick plant he and his brother are preparing to erect. The product is to be brick and drain tile and the plant will be of large capacity.

Z. B. Rawson, of Seattle, Wash., representing a French-American syndicate which recently purchased considerable clay land near Olympia, Wash., is conferring with citizens of that city with a view of building and operating two different plants, one to represent an outlay of $200,000, to have a monthly payroll of not less than $10,000, the other to cost $50,000 with a monthly payroll of about $3,000. He wanted the city to guarantee to take $15,000 worth of the finished product at the market price.

Zigmond Seisler of South Broad Street and Morris Rudnor, of South Clinton Avenue, Trenton, N. J., owners of a tract of land near Burlington, are making preparations to reorganize a company to erect a brick manufacturing plant.

R. G. Simonds, 20 Linden Court Chambers, Castlereagh Street, Sydney, N. S. W., in sending his subscription to "Brick and Clay Record," adds that he is interested in learning something about sand-lime brick.

At Chicago.—Advance Terra Cotta Co., capital, $500,000; manufacture and deal in terra cotta and other clay products: Walter B. Rix, Stanley K. Gage, C. A. Johnson.

At Dayton, Ohio.—The Davis Mantel & Tile Co., manufacturing and dealing in tile; capital, $25,000; 150 preferred and 100 shares; James K. Davis, James C. Davis, James C. Taylor, F. M. Davidson and Harry H. Prugh.

At Chicago.—Illinois Clay Products Co.; stock increased from $5,000 to $250,000.

At Collinsville, Ill.—Collinsville Brick Co.; capital, $2,400; manufacturing and dealing in brick and other clay products; incorporators, Thomas W. Sauer, Rosie Sauer, Maude E. Messinger.

At Woodland, Ill.—Woodland Clay Co.; capital stock increased from $50,000 to $100,000.

At Phoenix, Ariz.—The Valley Brick Co.; manufacture of brick and tile; capital, $10,000; incorporators, N. P. Olson and A. F. Miller.

At Nashville, Tenn.—The Rapid City Brick & Tile Co.; capital stock of $25,000. The incorporators are: Harry L. Bevan, R. O. Tucker, W. M. Shepman, W. J. Hockett and Thomas O. Perkins.

At Henderson, N. C.—Henderson Brick & Supply Co.; to manufacture, buy and sell, and deal in brick and pottery, etc.; authorized capital, $25,000, with $3,000 subscribed for by W. D. Burwell, J. H. Cheatham, Spottswood Burwell and R. S. McCain.

At Worcester, Mass.—The Worcester sand lime brick company has increased its capital stock by the issuance of 500 new shares of preferred stock.

At Kalona, Iowa.—Kalona Clay Co. organized with a capital stock of $70,000, for the purpose of manufacturing clay products.

THE EAST.

New York, July 22.—The eastern burned clay industry is divided into two parts, the optimists and the pessimists. The fortunes of business, now seem to rest with the Raritan river manufacturers and they are, of course, the optimists. In the Hudson river valley, however, there is no such roseate hue to the horizon, as viewed by the brick manufacturers, yet, strange to say, they are making more money this year than they have made in some time; not, perhaps so much in the actual volume of cash, as in the larger percentage of good accounts.

No one outside of a very few brick authorities can realize the sluggishness of the year just closed as far as the market for the Hudson river is concerned, and, likewise, no one can realize the change for the better that has come over the Raritan river market, save those who have actual statistics at their finger tips.

For the purpose of giving "Brick and Clay Record's" readers the first information on this subject, I have compiled the following table, covering the first half of 1912 with the first half of 1911. The sum total of Hudson river brick arrivals for the first half of this year is 161 barge loads less than in the corresponding period last year. The figures speak for themselves:

Week ending	1912.	Week ending	1911.
Jan. 6	1	Jan. 7	10
Jan. 13	0	Jan. 14	9
Jan. 20	0	Jan. 21	13
Jan. 27	0	Jan. 28	6
Feb. 3	0	Feb. 4	0
Feb. 10	0	Feb. 11	10
Feb. 17	0	Feb. 18	0
Feb. 24	0	Feb. 25	0
March 4	0	March 5	42
March 11	0	March 12	0
March 18	32	March 19	20
March 25	42	March 26	67
April 1	54	April 2	35
April 8	82	April 9	52
April 15	70	April 16	63
April 22	43	April 23	63
April 29	57	April 30	70
May 4	45	May 5	51
May 11	38	May 12	51
May 18	48	May 19	76
May 25	35	May 26	67
June 1	41	June 2	42
June 8	50	June 9	52
June 15	54	June 16	55
June 22	65	June 23	74
June 29	41	June 30	26
Total barge loads	800	Total barge loads	961
Total brick from Hudson valley in first half of 1912, 260,000,000.		Total brick from Hudson valley in first half of 1911, 312,325,000.	

Prior to July 1, 1911, the quantity of Raritan river brick sold in New York city was about ten per cent of the total quantity of Hudson river common brick sold in this market. In the first half of 1912, the sales of Raritan river common brick in this market is approximately 35 per cent of that of Hudson river brick. According to that basis 91,000,000 Raritan river brick have been sold in this city during the first half of 1912, as against 31,232,500 sold in this market during a corresponding period last year, a gain of approximately 66 and 2-3 percent.

On the basis of 260,000,000 having arrived in this city from the Hudson river district in the first half of 1912, the year's output for the district would appear to be below that for last year, which was about 1,200,000,000, unless the manufacturers, despite their protestations of being short of labor and manufacturing under great difficulties, are actually filling their sheds in anticipation of winter requirements and are not shipping all their products to this market. On the computation as shown on the arrival of brick barge loads, during the last six months, the market requirements for the calendar year will be only a little over half a billion. Of course, an allowance of at least 300,000,000 must be made for reserve brick for the first quarter of 1913, but even then, it would not bring the total output for the district up to the output for last year, and, in fact, it would hardly reach the total of 875,000,000 produced in the Hudson valley in 1908, the lowest yearly output in a decade.

But on the other hand the Raritan market is under a serious strain. The demand there is such as to create an unhealthy boom in brick, the danger lying in the inflation of the investment market so that speculative interests will seek to open up an unlimited number of new brick plants and to rehabilitate old ones which, even in boom conditions cannot hope to permanently succceed.

The half year in the market is entirely different from the half season on the yard and offers different foundations for figures, but the foregoing shows the tendency of the market and the volume of brick that is being consumed here from the two leading brickmaking centers in the east. The figures tabulated reveal the extent of the inflation of the Raritan market and the deflection of the Hudson river market, and reveal only the quantity of brick that is being sent to market. But manufacturers in the Hudson valley claim that the market is taking practically all the brick they are making, while the Hudson valley manufacturers say they cannot ship any more than they are now shipping because of scarcity of help and for the same reason, are making barely enough to take care of current shipments and culling.

The cause of these peculiar market conditions is directly traceable to the manipulation of the brick market by dealers during the first half of the year at the time the hearings in the consumers against the Greater New York Brick Co. were in progress. In fact, no change is expected to occur until this case is decided and it is not beyond the range of conservative expectation to say that the case may drag along for another year at least before a final settlement is effected.

In the meantime, the Hudson river manufacturers are doing very well. It is now a question of whether they can stand prosperity. They are finding a ready market for all the brick they ship in and are getting a flat $7.00 for it easily. The market was sold out only a week ago and there was not a single cargo to be had from Saturday, July 6 to July 8 and the twelve barge loads that were enroute to this city and were due to arrive here on July 8 were actually sold before the barges were tied up at the 52nd street dock.

New Selling System Satisfactory.

From this it would seem as though the new selling system was beginning to work out satisfactorily to the manufacturer and, as far as reports go, the manufacturers have been convinced that there is more money to be earned by controlling their shipments than by sending them into the market in any quantity and at any time, regardless of demand, and then accepting any price for them that is offered. But some consumers and some dealers have to be placated and, rather than buy from the Hudson river interests, pending a decision on the case they have brought against the North river producers, they are going into the Jersey market, except where North river brick is specified. The Raritan interests are pleased because they are getting the same price that Hudson brick brings and are getting a good leverage into the New York market. The Hudson brick men are depressed only because some of them think they are not selling as much brick at $7.00 as they were when their brick were only bringing $4.50 and it is these few discontented ones who may prove to be the thorns which will pierce the envelope of the prosperity balloon which is sailing over the Valleys of the Hudson and the Raritan.

Other Factors in the Market.

There is a healthy tone to the whole burned clay market here in the east. The Atlantic Terra Cotta Co. has its contract finished within ten stories of the top of the Woolworth building and is looking for contracts that will take up some of its plant capacity when this job has been finished. The same is true of the National Fireproofing Co., which is supplying the fireproofing block. In the case of the New Jersey Clay Products Co., President Charles A. Bloomfield reports that despite the fact that they have recently enlarged their plant at Fords, they are sold up to the first of December.

In front brick there is a good demand that is increasing as the building season progresses. Roofing tile is in better call, though not heavy so far. Prices in these lines are without change.

CHICAGO.

Chicago, Ill., July 25.—Summer has come with a vengeance but there has been no demoralizing effects upon business as a consequence, and the reports are all that could be hoped for at the present. The brick demand continues unabated and the plants are still working to capacity. Each day sees new permits let for all kinds of structures, and the activity that has been noted for some time in building is still in evidence.

The same conditions apply to the other clay lines. The only feature that mars the situation is the complaint heard here and there about the prevailing low prices. This applies to face brick and sewer pipe more particularly than to most other lines. It would seem that the sewer pipe manufacturers should, by all means, get together and form some kind of an organization not only to raise, prices to a profitable basis, but to foster the good that could otherwise be accomplished through organization.

At some of the plants there has been some difficulty in getting as many men to work as desired. The extreme hot weather has had the effect of seriously decreasing the number of men in the plants that must do kiln duty.

In another section of the magazine we cite the good work that has been undertaken and accomplished by an association of Chicago brick men to boost the use of paving brick for the streets here. It is a wise idea and one that would well be imitated by others who are permitting the brick opponents to gain the upper hand with the boards of improvement and the councils. The use of brick streets should be more general, and the matter is of such importance that it demands much attention and consideration from those interested in order that brick may have its share of the public work.

At the present time there are a number of large and exceptionally attractive buildings being erected of clay materials in this city. These include business, mercantile, office, apartment, factory and club structures.

W. H. Joyce, president of the Chicago Sewer Pipe Co., is out of the city on a short vacation. The offices of the Chicago Sewer Pipe Co., have been moved from 1137 to 1139 and 40, in the Unity Building. The change has been very pleasing as there is not only additional room but very much more light and better air. The demand for sewer pipe at the company's plant has been very fair. The only trouble being low prices, and this has been the one stumbling block to all operators in this line.

Mr. Cormack, of the Wisconsin Lime & Cement Co., has had a very fair trade on face brick in the past few months, and the indications are fairly pleasing now. There has been some difficulty in securing as favorable prices as might be hoped for, but otherwise there has been no complaint.

The Masons Specialty Co., states that business has been very fair within the past few months, and the demand has been all that could be hoped for. The call was for all kinds of clay building material specials, and the business during the past spring and early summer has been in every respect satisfactory to the company.

Much activity is still in evidence at the large brick plant of the Carey Brick Co., and orders are still increasing as they have been for some weeks. It would appear at the present time that the demand will be strong, well up into August. Even then there will in all likelihood be a strong demand and the fall business in building operations no doubt will keep the brick manufacturers here very busy.

Mr. Charles S. Reed, president of the Chicago Retort & Fire Brick Co., feels very well pleased over the continued activity in business and says that there has been considerable improvement of late in conditions. At no time has there been any noted falling off in orders, and the outlook is very favorable for the future of the company.

The offices of the Midland Terra Cotta Co., have been moved from 522-23 Chamber of Commerce Building to 1120-22 in the same building. The change gives the company very much more space and better facilities for conducting its rapidly increasing business.

The Wm. E. Dee Co., has been very much rushed for some weeks with orders for a varied line of clay products. The demands are still strong, and the outlook is such as to make the future seem very pleasing indeed.

The brick department of the Meacham & Wright Co., has been finding conditions favorable and present prospects give every promise of a steady demand for face brick in the future.

What had been advertised as the Greatest Sporting Event of the Season, a championship base ball game on Saturday, July 13, at Washington Park, was an event that was fraught with pleasure. The opposing teams were the Contractors and the Material Men. A purse of $500 in gold or in material was given to the winning side. The fact that the day was the 13th did not make any difference and the wind up—well perhaps there had better not be very much said about the final landing place of the men. However it will suffice to say that there was a jolly crowd and a jolly time, and the day was one long to be remembered by those who came to see and act.

Prominent stars among the material men, in the "line up," we note the names of Thomas Moulding, captain and manager, Hal Binyon, second base; Fred Schutte, third base; Joe Houck, Lou Binyon and Jno. Coombs, substitutes.

The reports show that Chicago has taken the lead among other cities, so far as activities in building lines go this season. While complaints are frequent as regards many other industries, the building industry, and this includes the varied allied clay products, has been most notable this year. There has been an awakening in the minds of a vast majority of the people as to the needs of structures that are able to cope with fire. Burned clay has demonstrated its ability to withstand the flames and the increasing demand shows what may be expected in the next few years, and we can expect to see a very decided reduction in the fire losses that are now so common in all sections of the country.

The American Terra Cotta & Ceramic Co., has been active throughout the season, and there seems to be no abatement of demand for this popular material. There has been a rush to keep up with orders and the situation is most gratifying to the firm.

The newest organization here in the terra cotta industry has just been incorporated. This is the Advance Terra Cotta Co. The capital stock is $300,000, and the company will manufacture and deal in terra cotta and other clay products. Those interested in the company are: G. A. Johnson, Stanley K. Gage, and Walter B. Rix. No definite plans have been made public as yet with reference to the operations of the company.

KENTUCKY.

Louisville, Ky., July 27.—If all industrial lines might proceed upon the same schedule with the brick trade in the Falls Cities at present, the country would certainly be on a boom. For during the heat of battle at Chicago and at Baltimore, when presidential candidates for the race of next November were nominated, the clayworkers of Louisville and Kentucky forged ahead, undisturbed in the summer's rush of business. Certainly there are no signs of too much politics anywhere in this section of the country.

The weather conditions have been such that it has been easy for the workmen at local yards to work a couple of hours overtime every day, and Bluegrass shale deposits are nicely dried out ready for working. The structural work of the month has proceeded without the slightest hindrance with every bricklayer employed on a local job putting in his full quota of time and energy. Prices are good, collections are in a reasonably healthy condition all around, and all signs point toward the accomplishment of one of the best business years that the clay-working interests of this section have known for a long time.

That the fiscal year of 1911-12 will be of the $5,000,000 type, so far as the building it has and will produce is concerned, is practically assured. In this respect it is evident that the current term is providing just about 100 per cent more business than a normal or dull building year would develop. An inspection of the records in the office of Building Inspector Robert J. Tilford shows that the average aggregate of buildings, valuations specified and permits applied for, since 1900 has been between $2,000,000 and $3,000,000 a year. It is evident that the $5,000,000 total this year will double the average building activity of the Gateway City.

In some respects the year has been phenomenal. All standing records for certain months have been broken. Last February, for instance, when the City Hospital permit was awarded, a total valuation of $999,680 worth of building was recorded in a single month.

Within the past month alone, plans for a couple of million dollars' worth of building have matured. A big proportion of this new business will require several months to develop fully, of course, and the newest structures for the Gateway City will probably not be completed until this time next year. An announcement of prime interest to the brick men and builders is to the effect that plans have been completed for what will be the biggest edifice in the entire South, the home office building of the Southern National Life Insurance Co., of Louisville.

Edward L. Williams, president of the Southern National Life Co., and his associates have determined upon Joseph & Joseph, well known local architects, as the designers of their new headquarters. The structure is to be a large-sized miniature of the Woolworth Building in New York City. It will stand twenty-five stories high, or a distance of 290 feet from its base to the tip-top tower, being one of the handsomest and best-equipped as well as the biggest structures in Dixie. The building will occupy the southeast corner of Fourth avenue and Market street.

That a 15-story office building which, because of the area it covers, will be one of the biggest in Louisville is to ornament the northeast corner of Fourth avenue and Walnut street is the determination of John P. Starks, the well known local capitalist who purchased this property a year or so ago for $300,000. Mr. Starks has employed the D. H. Burnham & Co., prominent Chicago architects, to draw plans for the building. A general outline which has been accepted by Mr. Starks provides that the basement, first and second floors shall each contain eight stores, that special provisions shall be made on the fifth, seventh and eighth floors for doctors and dentists and that the remaining floors shall be devoted to general offices. The award for the erection of the building will be made July 4 or thereabouts and work upon it will commence immediately afterward, so that it may be completed by March 1, 1913.

A $250,000 theater and business block is to be erected upon the southwest corner of Fifth avenue and Walnut street if the plans of a syndicate of business men of Detroit, Mich., do not go awry. Detroit capitalists recently purchased from the Underwriters' Realty Co., of this city, the extensive site between Fifth avenue and Center street, on Walnut street. According to Col. Fred Levy, of Levy Brothers, of Louisville, who has been advised of the plans of the new owners, a theater capable of seating 3,000 persons and supplemented with small stores and offices is to be erected on the site.

The erection of "tax-payers" in certain portions of Louisville's retail business district is proving to be a source of business for local brick men. There are more brick than one would imagine in the average row of stores erected on Fourth avenue property which must be temporarily improved for commercial purposes against the advance of the shopping district southward along that thoroughfare. A corner lot at Fourth avenue and Broadway was recently leased for 99 years by W. H. McKnight to a syndicate headed by Louis Seelbach and others. This property is to be temporarily improved with medium-sized stores, as it is listed as one of the most valuable pieces of realty in Louisville, for which rentals approximating $1,900,000 will be paid by the lessees to the McKnight estate for the next ninety-nine years.

The work of closing out the interests of the Hydraulic Brick Co., which was for years the biggest clayworking enterprise in Louisville, is progressing in good shape. The big stock of brick which the company had on hand a couple of months ago has practically entirely disappeared and everything is being made ship-shape about the two yards which remain, so that they may be closed down and so that active business may be discontinued altogether. There has been talk of outside capital being injected into a new enterprise which will take over the old Hydraulic Brick Co.'s present properties, the Central yard and the Southern yard. A project of this sort would undoubtedly prove successful, for the excellent market afforded during the current building boom in the Gateway City renders a big and reliable source of supply imperative. Whether or not Chicago clayworkers will invade the local field, as is now rumored, is a matter to be determined in the near future. For the present, the members of the Hydraulic will content themselves with drawing out of active trade after having been a central figure here for years.

A. P. Hillenbrand, Sr., has been very busy during the past month preparing to start the Chambers end-cut machines at his new yard on the Poplar level road. Mr. Hillenbrand recently purchased the Eastern yard of the Hydraulic Brick Co. securing a well equipped plant with a capacity of about 35,000 brick per day. Having spent most of his life in the trade, at one time being the owner of a big yard in the East End which was destroyed by fire, Mr. Hillenbrand is thoroughly renovating his new property and will begin operations as soon as possible.

Donald McDonald, Jr., the representative of a number of out-of-town manufacturers of high-grade face brick and the exclusive local agent of the National Metal Weather Strip Co., is handling some fine business. Just as an evidence of the fact that he has gotten his share of the 1911-12 building boom, Mr. McDonald has purchased a new automobile. It is a racy Oldsmobile roadster. The face and fancy brick salesman is an enthusiastic motorist, having driven various cars for several years.

Now is the time when the Southern Brick & Tile Co. handles the finest tile trade of the year. T. Bishop, president of the company, is working the state trade at present, and has contracted during the month for drainage jobs in various Western Kentucky municipalities, including Hopkinsville, Vine Grove and West Point. Mr. Bishop has not neglected the brick department of his business by any means, however, and is now commencing the delivery of several hundred thousands of Southern brick to the new City Hospital, which the A. Bentley & Sons Co., of Toledo, O., are erecting at a cost of more than $800,000 in this city.

Jefferson Bannon, of the P. Bannon Sewer Pipe Co., has returned from an excursion which promises to materially increase the business which his company will receive from the pennyrile section of the state henceforth. As a member of a delegation of a hundred or more representative Louisville merchants and manufacturers, Mr. Bannon recently enjoyed a three-days' tour of Western Kentucky and Tennessee. The entire body of business men embarked in a special train under the auspices of the Louisville Boosters' Club, and crowded seventy-two days'work into seventy-two hours while they were on the road. Souvenirs ad libitum were distributed at each of a score of stops, and throughout the route of the trade evangelists they were heartily welcomed by a constantly-growing clientele in the pennyrile. Mr. Bannon expects business to be even better than it is now in sewer pipe, tile and terra cotta, as the result of his trip.

Owen Tyler, the local representative of a number of face brick manufacturers, has originated the advertising phrase, "The tooth of time gnaws at the vitals of values," and is using it in reference to the durability and permanent values of brick construction. The Tyler ads savor of the famous talks on advertising written by W. C. Freeman, of the New York Mail. One of the stories which he recently told to the public of the Falls Cities relates of the experiences of two New York property owners, one of whom erected a brick house thirteen years ago, while his neighbor built of frame. Since that time the frame house has cost $1,250 in repairs, in addition to its original cost of $10,000, and is now appraised at $6,200. The brick structure has cost only $200 to keep in tip-top condition and is now appraised higher than its original cost, because it would cost more to build nowadays. The lesson in the comparison is simple, and has been easily learned in Louisville.

The members of the Spahr Brick Co., of Maysville, Ky., have reconsidered their recent decision to withdraw from business, and the Eastern Kentucky plant will not be put up at auction August 15, as was announced a short time ago. Instead, the Maysville clayworkers have stated, machinery for the manufacture of sand-finished and common red brick is to be installed, and the company's kilns will be enlarged to enable it to burn a greater variety of products than heretofore, placing its interests upon a higher plane than ever before. The Spahr company is capitalized at $100,000 and is one of the biggest in its field. Its members temporarily considered retirement from the trade not long ago because of the pressure of competition. However, it has been determined that a wider range of stock for the Maysville brick men will restore their old-time profits.

Four hundred thousand brick are to be burned by the Alexander Brick Co., of Cadiz, Ky., between now and January 1, 1913. The Cadiz manufacturers recently re-commenced operations after an enforced vacation brought about by bad weather. The sale of 60,000 brick which have been manufactured since the plant re-opened has been accomplished and the outlook is pronounced to be exceptionally bright in Cadiz.

When the municipal authorities of Hopkinsville, Ky., recently appropriated $10,000 for street improvement in that city and when this sum was augmented by $5,000 subscribed by property owners, the question naturally arose as to the best type of thoroughfare to be adopted as standard in the Western Kentucky city. Prominent Cleveland, O., brick manufacturers, as representatives of the National Paving Brick Manufacturers' Association, paid a visit to Hopkinsville at the psychological moment and told the General Council something about the famous vitrified block streets of Cleveland. The result is that a couple of miles of brick thoroughfare are to be laid in Hopkinsville this year and every year for a long time in the future.

George Katterjohn is the contractor who will erect a handsome brick church for the Frist Baptist congregation in Paducah, Ky. The Baptist Building Committee recently awarded a contract for the work to Mr. Katterjohn and the erection of the $50,000 edifice will proceed at once, its owner having specified that it shall be built of pressed brick.

The Interstate Commerce Commission at Washington, D. C., has granted authority to the Chicago & Eastern Illinois Railroad Co. to establish rates on brick from Brazil, Ind., to Louisville, taking the same rates between those points now in effect via the lines of other carriers. Heavy brick shipments from Brazil to Louisville are to rule during the summer, for most of the gray face brick to be used in the new $1,000,000 City Hospital in Louisville are to come from the Hoosier city.

"No city is complete without a brick plant," is the slogan of the Consolidation Coal Co., one of the biggest operating concerns in the country. The Consolidation company is establishing a mining town on Wright's Fork near Whitesburg, Ky., and has founded a brick yard with 25,000 daily capacity for the purpose of burning materials for hundreds of residences which are under way at that point.

Zeb Ward, of Little Rock, Ark., has been awarded a contract to provide Lexington, Tenn., with a complete sewage system and extensive property drainage facilities. The work is to cost approximately $11,500 and was authorized at a recent session of the Board of Aldermen of Lexington.

Arthur Pratt, a well known clayworker of Athens, Tenn., has announced that he will build a drain tile factory in that city at once, and will begin as soon as possible.

PHILADELPHIA.

Philadelphia, Pa., July 28.—The general business situation has not been of the best this year, owing to unsettled political issues, the tariff reduction talk and general dullness in most lines. The condition of the clay-working industry, however, has not been bad. A large amount of building has been going on this year, in which a large amount of brick and other clay materials were used.

Building will continue through the summer and by the end of the year the season ought to be as good as any of recent years.

The use of tile for floors and ceilings or for decorative purposes has been on the increase and these materials are specified now where they were never used a few years ago. The terra cotta business is fairly good.

The contracts for paving brick throughout the state have been up to the usual mark. The demand for fire brick has been quiet the last two years and is only fair this year. The pottery lines are quite good and in moderate demand. Art pottery objects are becoming more popular every year and are selling well. Sewer pipe has had a moderate demand.

The Harbison-Walker Refractories Co., with general offices at Pittsburgh, has opened a local office at 1402 Morris building, in charge of J. E. Morgan, who was district sales manager.

The Beaver Valley Clay Pot Co. is enlarging its plant at North Rochester, Pa.

The Independent Brick Selling Co., making and selling hollow, paving, building and sewer brick, sold last year here over 30,000,000 brick. The office is in charge of J. F. Brady.

Thomas M. Wilson, of this city, is at the head of the Milton (Pa.) Brick Manufacturing Co., which company has capitalized at $250,000. A tract of land comprising 935 acres has been bought and the concern will erect a large building and paving brick plant.

The Darlington Brick Co., of this city, placed an order through its Chicago representatives, the Meacham Wright Co., for 225,000 smooth gray brick for the Rand-McNally building and 400,000 gray brick for the Hyde Park High School building of that city.

A. S. Reid & Co., of Newark, N. J., dealers in front, paving and enameled brick, has opened an office in the Morris building here. W. Harry Gaul and James Tongue, formerly with O. W. Ketchum, are in charge.

The S. Barnes Brick Co., of Bolesville, near New Brighton, Pa., increased the output of its plant sime time ago and is doing well.

The Tempest Brick Co., of Gallatin, Pa., changed its power equipment from steam to electricity and remodeled and increased the capacity of the plant.

The American Brick Manufacturing Co., of Staunton, Del., has been reorganized and more capital obtained. The plant will be enlarged and other offices will be opened.

The Darlington Brick Co., of this city, through their Cincinnati, Ohio, agents, placed a contract for 160,000 gray Devonshire rought cut faced brick for the high school of that city. The local office is in the Crozer building.

Edmund Webster, of Webster & Keyser, brick manufacturers of this city, has been elected a member of the board of directors of the Southwestern National Bank.

The Corry (Pa.) Brick & Tile Co. will spend $30,000 in enlarging the plant. The new officers are: George H. Dunham, president; W. M. Lindsey, vice-president; A. J. Hazeltine, secretary and treasurer; D. Warren De Rosay, general manager.

C. S. Estes has resigned as superintendent of the Ridgway (Pa.) Brick Works.

Shellenberger & Smith, of the Builders' Exchange, have had the following orders: Akron tile shingles for the Silberman residence at Rydal, Pa.; brown and green glazed Spanish tile, a large order, for E. S. Radley, on North Broad street; light gray face brick for the Richards Memorial Church, at Sixtieth and Walnut streets; also several large jobs specified by Architects Cope & Stewartson. This firm has had quite a large run for floor or quarry tile, manufactured by the Akron (Ohio) Tile Co.

G. W. Foster, of Lewis Run, Pa., and C. E. Foster, of Bradford, Pa., have incorporated the Youngsville Brick & Tile Co., the output to be for the Lake Shore Material Supply Co., of Dunkirk, N. Y.

The Hayes Run (Pa.) Fire Brick Co.'s plant has been running full time and sometimes night and day forces and has cleaned up some large contracts. A thoroughly equipped laboratory has been established at the plant to test clays, both chemically and physically. The firm has made large improvements to the plant and are in shape for a much bigger business. O. A. Harvey opened an office in Washington D. C., to handle their line as well as others. A. W. Slateman, formerly manager for the Karthaus Fire Brick Co., of Karthaus, Pa., has succeeded O. A. Haney on the selling force.

C. A. Rogers, A. J. Flynn and G. K. Wilkin, of Asbury Park, N. J., have organized the Imperial Clay Co., with a capital of $125,000.

William Hausman has conducted for several years the old Nonnemacher brick plant at Allentown, Pa. A good local business is done there. Louis M. Nonnemacher died a few months ago, at the age of sixty-nine years. He had been in the brick business most of his life.

The first sample of the polychrome tile work in this city has been used in the new building for the Horn & Hardart Baking Co., at Eleventh & Ludlow streets. A combination has been made of green and buff upon cream. The work was done by William Steel & Sons, contractors. The tile was made by the Atlantic Terra Cotta Co., of Perth Amboy, N. J., the local manager being C. T. Myers.

The Matthews Gravity Carrier Co., of St. Paul, Minn., has moved its plant to Ellwood City, Pa., where it has a site of 200x500 feet. A new plant has been built, which will double their capacity, on the two-unit plan, and there is also provision for a third unit. They manufacture the gravity brick carriers and have factories in Toronto, London, England and Australia. A complete set of new machinery will be installed. At the new plant the firm has natural gas, if they wish to use it, but will probably use electric power. The St. Paul plant will be dismantled.

THE PACIFIC NORTHWEST.

Portland, Ore., July 25, 1912.—The last week has been one of festivity, and the visiting Elks belonging to the brickmaking craft will realize what grand openings we have in Oregon for the clayworking industries. The building permits for the first ten days in July aggregated $481,140 or a daily average of $50,000. This is certainly an excellent record, considering the counter attraction and clearly shows that the building boom in Portland is by no means at an end. The largest single permit was for a brick library, while the plans for the new Center library are now being figured. The "made in Oregon" movement is taking a firm hold of the people and the daily press is helping out considerably. Oregon bought last year over $4,000,000 worth of clay products. We produced about one million. Yet all the raw materials for producing all we consumed were present in abundance in Oregon. For pressed brick we paid $27.50 for use in Portland, while pressed brick of the same quality is made at Columbus, Ohio, for $18. Yet there is only one company in Oregon manufacturing pressed brick equal in quality to the Columbus product. The brick plant is small only because we do not patronize home industries enough. We can make brick for our own use, but we don't. We can make tile and terra cotta for our own use, but we don't. We can make paving brick in Oregon for our own use, but we don't. We could have made the $4,000,000 worth of clay products, but we did not, and we want Eastern investors and brickmen to come out, and with new capital start something moving.

A move in the right direction was made by the Board of Education of Portland, last week, when the bids for the new Failing School were opened. The Board decided that "Oregon-made" brick should have the preference in the construction of the new school, providing the manufacturers with plants at Willamina and Newberg would offer them at the same price as the Puget Sound manufacturers. Local manufacturers, it was stated, asked $2.00 per thousand more than Puget Sound yards. The Manufacturers' Association was represented by T. H. Mann, of the Pacific Stoneware Co., who asked that the Board advise that only Oregon products, and in this case that brick especially, should be used.

All the yards are fairly busy, but the demand for brick is limited. So far the open yards have had a poor season on account of the rainy weather.

The old brick plant at Cedar Park near St. Johns, which has been closed down for three years, has been taken over by the Multnomah Sand & Gravel Co. Walter Goss has been appointed superintendent, and will put the plant in operation at once. It will employ about twenty men and will specialize on first class building brick.

The demand for brick in the southern part of the state is better, and the first car load of pressed brick to be used for the new depot of the Nevada-California-Oregon Railroad has been received at Lakeview. These brick were shipped from Reno, Nevada.

The penitentiary brick yard at Salem which is now operated by Cottern and Denton, has installed an entire new outfit for making soft mud brick. Under the terms of the contract with the State, the Governor will supply the convict labor not to exceed 35 convicts, and the firm in return agrees to pay the state 35 cents a day for each convict. In return for the clay used in the manufacturing of the brick, the firm agrees to sell brick to the state for its own buildings at a price not to exceed $5.00 per thousand.

L. D. Morris, who was formerly manager of the Dominion Shale Brick & Sewer Pipe Co., of Vancouver, B. C., is now with the Nanaimo Pressed Brick & Terra Cotta Co., supervising the construction of their new plant. It will be equipped with a four-mold Berg press and brick will be made from a hard blue shale found near East Wellington, where the plant will be located.

Denny-Renton Co. Entertains.

Three hundred members of the Seattle Ad Club were entertained last week at luncheon in the Rathskeller by the Denny-Renton Coal and Clay Co. The postal card invitations which were sent out read as follows: "Save Tuesday, July 9th for the time of your life, secure a Potlatch lunch with a Potlatch prize package for you." Other postal cards followed on each succeeding day, giving further announcement as to the program for the luncheon.

After luncheon, the president of the club introduced J. R. Miller, manager of the Denny-Renton Co., and placing upon his head an eight-inch sewer pipe, crowned him "Sewer Pipe King of the Day." King Miller appointed a sergeant-at-arms, and gave him two paving brick with which to maintain order. A catechism was read and answered in chorus covering the leading features of the company's organization, factories and output. Songs and music added more life to the program. The fun was followed by serious talks by Judges Thomas Burke and J. T. Ronald on highways and their construction. Joseph Blethen gave instructions about Potlatch week and Mayor Cotterill closed the hour with a toast to the city and to the company.

During the luncheon an opportunity was given all present to address a stamped post card, carrying the advertisement of the company, to some friend where it would do good. The club broke away from the luncheon in a joyous mood and left the building wearing Potlatch daisies as souvenirs.

COHOES, N. Y.

Cohoes, N. Y., July 28.—This is a knitting mill center, a woman's town, and the industries mainly employ the female sex. Considerable brick made here goes to New York, Schenectady or Boston. Prices here average $5.00 to $6.00 per thousand. Brick are shipped largely by boat loads to New York.

At present prices there is no money in making brick, and one plant will stay closed till brick conditions improve.

The Aetna Brick Co. opened its plant this spring, making common building brick, with a daily capacity of 50,000. Considerable of the brick are shipped to New York and nearby cities. There is not much demand at Cohoes for brick. They get from $5 to $6 for brick by the boat load.

The Cary Brick Co. has a complete plant, and ran all winter. It has enclosed buildings, steam dryers, etc. They say the market is too cheap to sell in New York. Prices are about $5 at yard and $6 delivered at some points. This plant makes 5,000,000 brick a year. The plant at Newton Hook burned down, with a loss of $16,000, but it is all rebuilt now and under operation. This plant has four machines, two dryers and two open yards, with a capacity of 3,400,000 brick. This firm also has two more brick yards. The manager says he would be satisfied if he could get $6 per thousand at kiln for brick.

John Murray bought out his partners, Roberdy Bros., and is now the sole owner. The plant was not operated last year because the price of brick was too cheap and he says he will not open till prices improve. He figures it is better to keep the plant idle if he can't make brick at a profit. Brick are selling here in large lots for $5 and small lots at $6. He burns wood in the kiln.

OBITUARY.

Fred W. Harvey, proprietor of the West End brick yard, died July 7 at 33 Wright avenue, Auburn, N. Y. He was a member of the Auburn Masonic lodge and of David Chapter, Royal Arch Masons, also of Salem Town Commandery, Knights Templar. Mr. Harvey is survived by his wife, one daughter and one son.

James C. Dobbs.—The death of Mr. Dobbs at Collingswood, N. J., July 9, removes one of the pioneers in the brick and tile industry in the East. Mr. Dobbs was born in Boston, England, seventy-four years ago and came to this country at the age of twelve and engaged immediately in the brick business in the employ of his uncle at Collingswood. After about ten years he launched in business for himself at Westville and later secured the plant of his uncle at Collingswood, which he has conducted successfully for a half century. He was the pioneer in drain tile in this part of the country. His family consisted of five sons and five daughters, eight of whom survive him. Each of the sons has been at some time identified with the brick business, S. B. Dobbs, the eldest son, being one of the largest face brick dealers in the East, with offices in Philadelphia, New York, Washington, D. C., and Atlantic City, N. J. The plant is being operated to its capacity by the executors of the estate.

James P. McCollum—Eighty-five years old, died at his residence, 312 East Breckenridge street, Lousville, Ky., of the infirmities of age. He had been in failing health for several months and his death was expected. Mr. McCollum was the pioneer brick manufacturer of Louisville, and had resided in that city for fifty years. He was born in Ireland, and came to this country while a small boy. He lived for several years in Philadelpha before going to Louisville.

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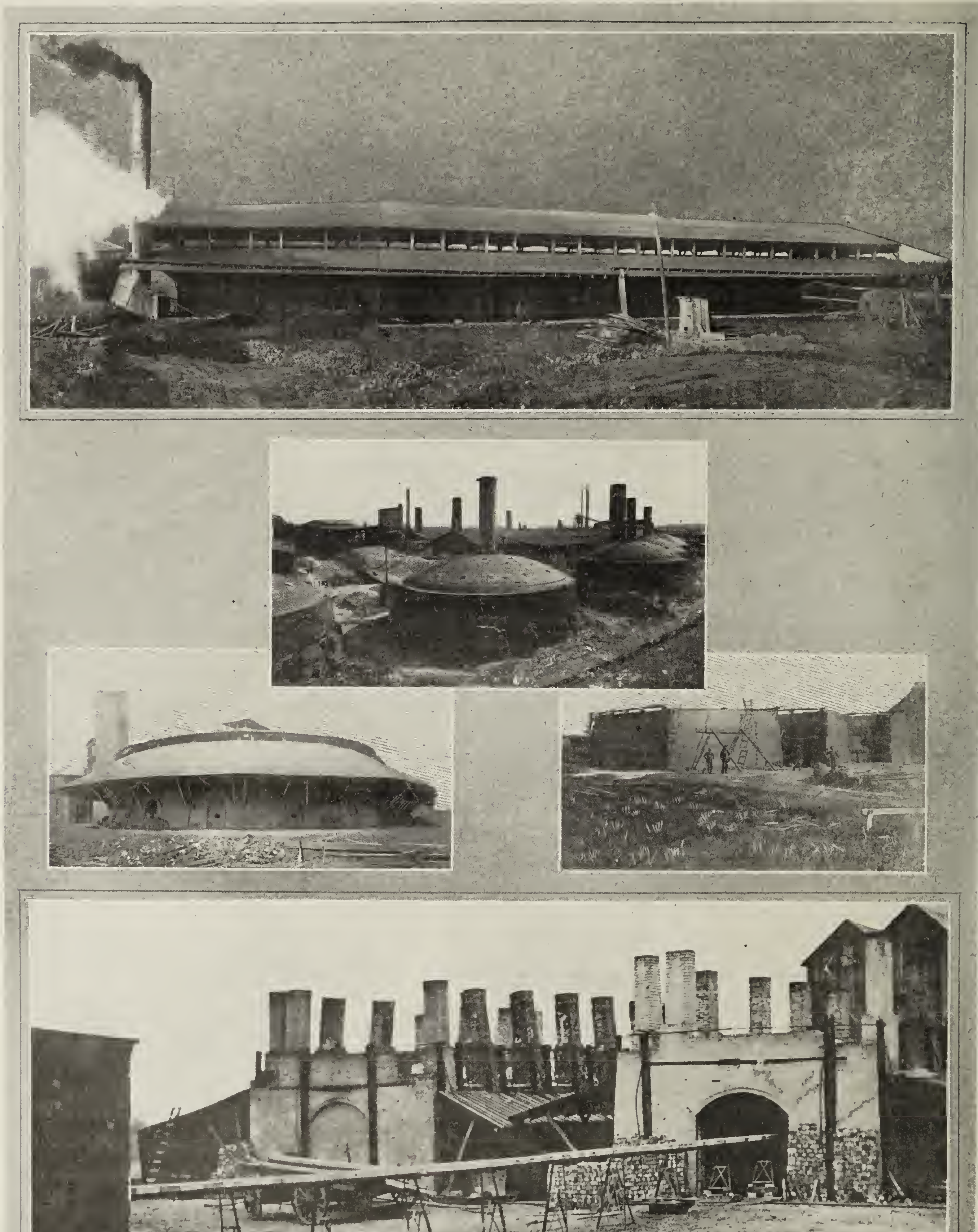
POPULAR TYPES OF MODERN KILN CONSTRUCTION



The upper illustration shows a gas-fired continuous kiln. The second view, the common round down draft type. Below, at the left, the round continuous model. At the right, is shown the scove or up draft type. Below, is a rectangular down draft kiln, showing conveyor in use.

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WHY KILN CONSTRUCTION IS IMPORTANT

Essential Features Frequently Overlooked With Disastrous Results—Poorly Built Kilns Result in Heavy Losses—Good Drainage Essential

By ELLIS LOVEJOY, E. M.

WE have seen so many badly constructed kilns that it seems to us a discussion of this subject will be appropriate The kiln is the most important factor in a clayworking plant and the most expensive as well. We often hear it remarked that, in brickmaking, the money is made or lost in the burning, and there is a good deal of truth in it. We cannot expect good results from a poor kiln, but many clayworkers seem to prefer to pay tribute in losses in every burn rather than to spend any money in good kiln construction. It is certainly "penny wisdom and pound foolishness."

The first question a clayworker asks is: "What type of kiln shall I build?" This question we will not now discuss.

The next question should be in regard to the proper construction of the kiln, and we will attempt to answer it, although it is seldom asked.

Drainage of Kiln Bottom Necessary.

The first item in the specification should be the drainage. A kiln bottom should be dry—we are inclined to say must be dry.

In many kilns we have found standing water in the flues. We recall one instance where there were six or more inches of water, and the brickmaker explained that the ground was full of springs, but, he added, "We soon drive off the water after the fires are started." Yes, but it took a pound of coal for every ten pounds more or less of water, and every burn cost $3.00 to $5.00 extra. This cost is the least item. The brick work is constantly drawing water by capilliarity and we have a water-cooled kiln bottom on which we cannot readily get hard-burned brick.

The kiln yard should have a main drain which will cut off the incoming ground water. These drains should be deep, laid with tile, and the trenches filled with broken stone and covered with cinders, to take away shallow surface water as well as deep ground water. If the kiln ground is wet, the excavation for the foundation should be trenched and tiled and the trenches filled with broken stone. Every kiln should have a tile drain under the deepest part.

Good Foundation Essential.

The foundation should be built of hard burned brick laid in cement mortar and thoroughly bonded throughout. Lime mortar will not set underground, but if the outer wall, to a depth of nine inches, is laid in cement mortar, the inwall may be laid in lean lime mortar, or even in clay mortar with a 10 per cent addition of cement.

Where the clay mortar is used, the brick should be laid dry and grouted with the mortar, thus insuring full joints and thin bedding. We consider the clay mortar better than the lime, but the objection to it is that the joints cannot be kept up with it to bond with the outside wall.

Main Wall Should Be of Hard Burned Brick.

The main wall should have hard burned brick to a depth of nine inches on the outer wall laid in cement mortar, or lime cement mortar, or lime mortar, preference being in the order named. The brick should be shoved into place on a full mortar bed to insure full joints all around and each course should be carefully slushed with mortar.

The inwall is to be of No. 1 fire brick, laid in fire clay mortar. The fire clay should be equal in refractoriness to the brick and should be made up into a thin creamy slip. If the fibre clay does not soften in water, as ordinarily mixed, it should be cooked and stirred until thoroughly softened.

There is more faulty work in laying fire brick than in any other part of the kiln construction and the frequent kiln repairs, often after the first burn, are due to bad fire brick laying. The mortar should be prepared as above described, then the brick should be dipped in the mortar side, end and edge, slipped into place with a sliding motion and hammered to a solid bed. Better fire brick laying would be assured if trowels were removed from the kiln. Only a hammer is needed and it should be used constantly. With the trowel, the mason spreads the mortar on the bed a half inch thick or more, dabs a little clay on the end of the brick, places the latter and taps it lightly with the trowel. Such fire brick laying is criminal. The mortar shrinks, inwalls loosen and fall in, flue arches sag, crowns bulge out of shape, floors get out of level in one burn, and the kiln is a candidate for repairs.

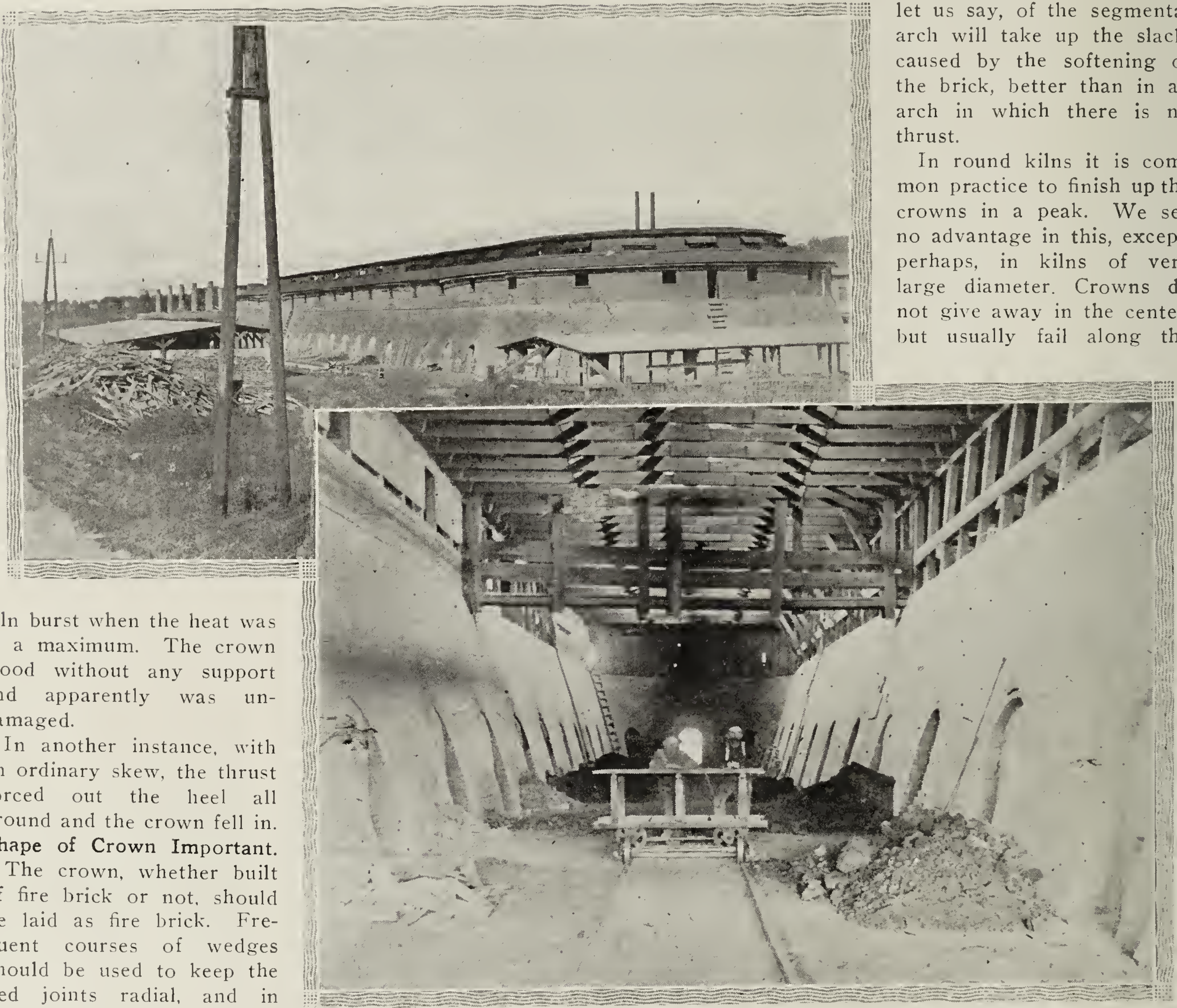
We find it best to bond the fire brick into the main wall, though in round kilns the fire brick wall is often built as an independent ring, but we have frequently seen kilns where the inner and outer wall separated when not bonded together.

The bond should be alternate courses of headers and stretchers, or at most not to exceed two courses of stretchers to one course of headers. The American practice of using five to seven courses of stretchers to one header course is bad and often the cause of the fire brick wall falling into the bags.

The backing up brick may be any soft brick. These may be laid in clay mortar, and the addition of a little cement is a great advantage. We have seen sand used to lay the backing up, but the objection is that as the wall cracks or crowds out or in the sand will run into the space thus made and increase the tendency to force the wall apart. Lean lime mortar has the same effect. Clay, however, hardens near the inwall, but the heat and cement will harden it towards the outer wall.

The Best Skew.

The best skew back is built of No. 2 wedges. In one instance, with such a skew the main band on a round kiln burst when the heat was at a maximum. The crown stood without any support and apparently was undamaged.



Upper Picture Shows 37-Chamber Haigh Continuous Kiln at Plant of the Onodaga Brick Co., Warners, N. Y. The Court of the Kiln is Shown Below.

In another instance, with an ordinary skew, the thrust forced out the heel all around and the crown fell in.

Shape of Crown Important.

The crown, whether built of fire brick or not, should be laid as fire brick. Frequent courses of wedges should be used to keep the bed joints radial, and in round kilns each course should have an occasional key to keep the face joints radial and to key up the ring.

The shape of the crown is important and there is considerable diversity of opinion in this regard.

Some use half circle arches on rectangular and continuous kilns on the basis that the thrust is less—practically nothing. This is a mistake. Thrust is a necessary factor to keep the crown in shape. A half circle arch will buckle out over the bags. This allows the center to settle and we introduce thrust in a segmental arch without any resistance to it. See sketch 1. The chances are that it will buckle more on one side than on the other, which is even a worse condition than buckling on both sides. As the buckling increases the thrust increases and the crown is short-lived. Thrust with the counter thrust of the braces is important in maintaining the shape of the arch.

It may be claimed that an arch usually buckles in, which we must admit to be the case, but it is because the brick in the crown will not stand the heat rising from the bags and soften, allowing the arch to sag. If we were asked to design a crown the shape of which was to take the place of refractory material in its construction we would have to decline the offer. However, we believe that the half circle (sometimes egg shaped) arch has no advantage over the segment of a circle.

The thrust, or wedging let us say, of the segmental arch will take up the slack, caused by the softening of the brick, better than in an arch in which there is no thrust.

In round kilns it is common practice to finish up the crowns in a peak. We see no advantage in this, except, perhaps, in kilns of very large diameter. Crowns do not give away in the center, but usually fail along the heel, where the heat is most intense. Expansion joints must be provided in rectangular kiln crowns, but it is a mistake to make them as wide as many frequently do. Two-inch spaces, every twelve to sixteen feet, is common practice, and we occasionally find them four inches and even six inches. It is our practice to make the expansion joints 3/8 inch to 1/2 inch.

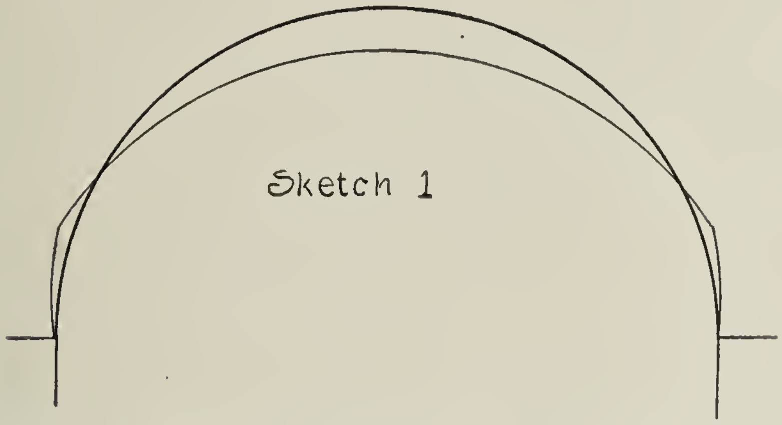
The expansion of sixteen feet of brick work at ordinary kiln temperatures is about one inch, but part of this is taken up by the shrinkage of the mortar joints, and usually some is taken up by additional shrinkage of the brick under the intense heat to which they are subjected in the crown.

Construction of Kiln Floor.

Uneven floors are the cause of considerable loss in the burning.

The foundation of the floor should be broken bats rammed to a solid bed and grouted with clay mortar. This should be covered with a bed of sand leveled and rammed and then paved with hard burned brick. The under floor work should be laid in fire clay mortar, or a thin clay mortar which will permit of a thin joint. The joint should be so thin that the shrinkage is practically nothing. The brick should be hard enough so that there will be no further shrinkage in them.

Expansion spaces should be provided between the floor work and the main walls, otherwise there will be a gradual forcing out of the kiln walls as we have seen on many yards. Arch brick should be used in turning arches over all flues, arches, etc.



A Kiln Arch Which Has Settled in the Center and Buckled on the Sides.

Walls of Stacks Should Be Double.

Large stacks, outside the kiln wall, should be built with double walls—the inside wall 4½ inches thick with an air space between it and the outside wall. Such a stack will not crack. It is important that the inwall be carried to the full height of the stack. Stacks will crack where the inwall drops off, and one can frequently determine the height of the inwall by the cracks in the outer wall.

The outer wall, of course, will be laid in lime or cement mortar, but the inwall we usually lay in fire clay mortar with the addition of some cement.

Thickness of Walls and Kiln Protection.

It is a great mistake to build kiln walls only 18 inches thick, as we often find them, and usually such kilns have only a 9-inch crown without any protecting cover.

Such shells, improperly called kilns, are subjected to air leakage with cold bottoms in consequence, and the radiation loss is excessive. Twenty-seven inches is a minimum thickness and heavier walls will be profitable in the end.

The crown should be covered with clay mortar, then paved, and finally covered with loose clay. It would pay to carry the outside wall up to the crown level, then fill with dirt to a depth of twelve inches or more over the center of the crown with suitable slope to the sides or rim of the kiln. It would also pay to inclose the kilns in proper buildings. Continuous kilns have walls often eight feet thick and the crowns are covered with dirt to a depth of 12 to 18 inches over the crown centers, and the entire construction inclosed in a building. If such massive constructions need protection from the weather, and it is profitable to so protect them, how much more important is it to protect the lighter periodic kilns?

We find variations of from 300 to 500 pounds of coal in burning a thousand brick, temperature being the same in both instances, and the difference is often entirely due to the kiln construction and protection.

THE EVER-PRESENT KILN PROBLEM AND ITS SOLUTION

There is no one item in the installation of a brick or clay product plant more important than the kiln. First, because of the great cost, and second, because in the burning, all the ware made may be ruined unless proper care is given.

It has been said that the kiln, like the Missouri mule, "is the contrariest thing about the plant" and the saying is well borne out, according to the experiences related by clay manufacturers.

A. J. Kautz, who has spent his lifetime in the clay business and who is considered an expert in the installation of kilns, as well as in the burning of clay products, has written an article on kilns and some of its problems for "Brick and Clay Record." What he says may be of some practical use to our readers who have troubles.

By A. J. KAUTZ

MUCH of the kiln trouble comes from the draft. It is very important that a kiln should have a large draft of easy access. The draft should be designed large enough to draw off all moisture, soot, or any other impurities that may be in the kiln. For instance, in drying off a kiln, the drying must be begun with a very slow fire. A slow fire gives off lots of smoke, and the brick, or other clay products in the kiln, are damp—and must be warmed up gradually. The draft then must be sufficient to draw away the soot in order to prevent it from settling on the product.

When the kiln begins to warm up the moisture begins to leave the brick and go toward the bottom of the kiln and if the draft is not sufficiently strong to draw off this moisture it will settle on the brick and cause whitewash. The brick, too, in the bottom of the kiln will also absorb moisture, causing them to mash down easily.

In some places clay is of such a nature that during the drying period it shrinks considerably. If the moisture is not removed as rapidly as it forms, as the kiln warms up, the brick will commence to dry on the outside while the center still retains moisture. The result will be that the outside will become dry and crack and check. The average clay requires from three to ten days for water-smoking this length of time being necessary because of the conditions mentioned.

As a usual thing not more than 212 deg. of heat are used to dry off the kiln. After the kiln is thoroughly heated from top to bottom, the brick are in such shape they take up the heat rapidly. The brick absorb the heat, as a sponge absorbs water. The top brick first, then the next course, and so on until the bottom of the kiln is reached.

If the draft is strong enough, the brick in the top of the kiln heat up faster than those in the bottom, and will get to the settling point before those in the bottom become heated. The result is, those in the top become overburned and those in the bottom are soft.

In the construction of the ideal kiln, these points should be taken into consideration as well as such matters as simplicity in construction and operation and strength and durability.

The flue arrangement has always been the vital point. Therefore it is well to make it large and strong so that the heat may go to the center of the kiln, and the draft controlled by dampers to suit all burning conditions.

The furnaces should be designed for using all kinds of fuel—solid or liquid. When solid fuel is in use a sliding grate is the simplest and easiest to be cleaned from clinkers, as it is well known that in stirring up a fire to remove the clinkers, the brick in the top of the kiln become fire-flashed.

The furnace should be so arranged that the fresh fuel does not move to the burning zone as soon as fired, but is well-coked before it goes to the hot zone. Air should be permitted to enter the furnace in such a way that it will temper the heat and make it mild and uniform. It also assists in carrying the fire to the bottom of the kiln.

Burning the brick hard at the bottom has always been a problem and my observation and experiences has been that as water will flow to its own level, so fire will burn to its own level. Therefore, the furnaces should be placed below the bottom of the kiln to insure good hard-burned brick at the bottom as well as at the top.

The fire boxes or flash walls inside the kiln should be so arranged that they will spread the fire evenly and uniformly to all parts. I have found it a great advantage to erect kilns like this on a unit system, that is, four kilns to one stack. By building kilns, in this manner, the stack is always hot, insuring a good draft, and obviates the building of fires in the stack to start the draft, as is oftentimes required.

Another common fault of many kilns is light walls. The walls should be heavy and massive. Arrangements to take care of the expansion and contraction which is the hardest work that a brick kiln has to do, also should be considered. The kiln lining should be built so as to provide for contraction and expansion.

With the proper system of dampering, the heat goes first to the crown, and from there the draft draws it uniformly down to the floor of the kiln through the brick. From there the draft flues convey the waste gases to the center of the kiln to the flue leading to the stack. The waste heat should be drawn from the kiln to the drier without interfering with the stack flues.

A MODEL NEW YORK VITRIFIED BRICK PLANT

At Warners, N. Y., is located the busy plant of the Onandago Vitrified Brick Co., The plant property comprises thirty acres of clay land and ten acres of shale land, situated conveniently near the West Shore and New York Central & Hudson River railroads, which afford excellent shipping facilities.

General View of the Onondaga Vitrified Brick Co.'s Plant at Warners, N. Y.

The machinery room is 50 by 150 feet, connected with a ten-tunnel dryer of the Sharer type. The clay is of a plastic character, chocolate colored, and the shale is of two kinds, red and gray, both being obtained near the plant and secured without the aid of mining machinery, the shale being blasted, then conveyed to the works by means of an aerial rope conveying system. The clay is drawn in dump carts. Two weeks' supply of clay is stored at a time.

In preparing the clay a Potts clay disintegrator is used, also two Phillips & McLaren dry pans. Two American Clay wet pans are also used. The screens used are of the Dunlap style, which the company manufactures for its own use. The clay is tempered in an American Clay 16-ft. pug mill, some water being added. Saw dust is used for the porous brick.

The stiff-mud process is used altogether, the brick being molded on an E. M. Freese & Co. mammoth auger machine.

Chain and bucket elevators and rubber belt conveyors are used throughout the plant. One hundred and thirty double deck dryer cars of the company's own make, holding 500 brick each, are used in the Sharer ten-tunnel dryer, which is built of brick. Seven transfer cars of the company's own designing are used in the transferring of the brick from the dryer to the kiln. The tunnel is heated by direct heat, 24 hours' time being required for drying. The kiln battery is composed of one 37-chamber Haigh continuous kiln and 10-round down-draft kilns, the latter being about 22 ft. in diameter with ten firing places in each kiln. The brick are set in the Haigh kiln five over two, three-course faced headers and one-course stringers. A view of the kiln appears on page 122.

Coal is used for burning, about 14 to 20 tons being required to burn a kiln of ware in the round down-draft kilns and six tons to each chamber in the Haigh kilns. The kilns are equipped with open floors.

The power is supplied by one Murray Corliss engine and two small engines and two return-tube boilers.

The product of the plant is common brick, "Onandago Browns," bullnose, octagon and standard square face brick in red, brown and black. The plant is run practically the year around. It was established in 1889, since which time it has been enlarged several times and all modern improvements added for making common and hollow brick and tile.

The officers of the company are: J. Brewster Gere, president; W. B. Gere, vice-president; Lamont Stillwell, secretary, and J. H. Mead, general manager and head of the sales department.

THE PRODUCER GAS-FIRED CONTINUOUS KILN

In the ever narrowing race for industrial supremacy and success, a Twentieth Century Limited inevitably superceded the ox-cart and the wagon train. The modern steel works, the old smithy and forge of other days, and electricity the "harnessed lightning" of the hour, lends its energies to the will of man, while beasts of burden, power of hand and human carriers find other niches and fit themselves into the ever shifting scheme of industrial progress.

Producer Gas-Fired Continuous Kiln, Burning Brick, Hollow Ware and Drain Tile, at the Plant of the Omaha (Neb.) Brick, Paint & Tile Co.

Changes and improvements crowding thick and fast in all departments of human endeavor, find a fertile field in the domain of the clayworker; the preponderant elements of labor and fuel contained therein, affording exceptional ground for the culture of industrial progress.

A fitting example of this progress is found in the new producer gas fired, continuous kiln, which combined the advantages of the down draft kilns with the proven worth of the continuous kiln; the reliability and merits of the former with the well known economy and advantages of the latter, coupled with a great advance in the way of unique and proven features of its own.

Its Advantages.

An enumeration of these facilities would include the advantage of centralization of fuel consumption at one point, making for cleanliness, elimination of fuel waste, saving in firing labor, and use of mechanical transportation of both fuel and ash.

Both the gas and the supporting air, being heated to a high degree, together, afford the most perfect and uninterrupted combustion and the attainment of the highest heats is made easy and practical.

Combustion, taking place in the kiln chamber under ideal theoretical and practical conditions, and all the elements thereof highly superheated make for ideal oxidation under high heats—a condition practically unattainable with direct firing methods.

All the well known and unquestioned advantages of the continuous principle of firing are applied in its fullest efficiency; utilization of the waste heat from cooling chambers to support combustion and accelerate the burning temperature, also the use of the heat from the burning chambers advanced to the preheating sections for the greatest possible utilization of the heat units and a minimum of stack losses.

Watersmoking.

By a separate flue system the watersmoking can be accomplished with pure heated air, effectually preventing kiln "scumming, or, any chamber can be cut out of the burning cycle to facilitate annealment in paving brick or vitreous ware.

In the use of producer gas, utilization of cheaper grades of fuel is also made possible.

Any clay can be burned in its greatest wealth of natural color under true oxidizing conditions from start to finish, or the widest variations of flash or reduction can be easily produced in one minute and cleared in an equal time with any desired durations.

Steady and unbroken flow of heat gases does away absolutely with the intermittent heating and cooling as evidenced in all periodical kilns, resulting in continuous, uniform progress from start to finish of the burn and showing in better quality and quantity of ware with a reduction of kiln waste and losses.

Saving of Space.

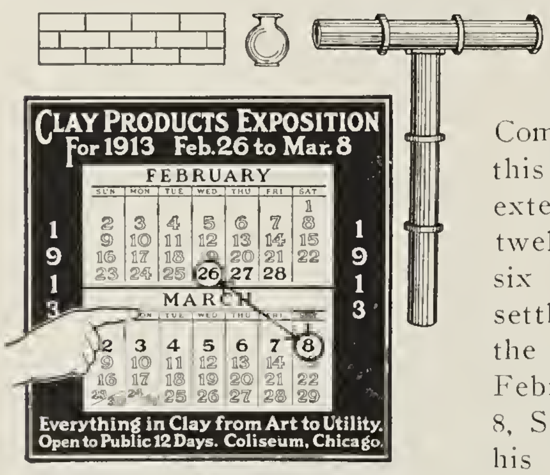
Compact arrangement of chambers allows of great saving in ground space, and labor, likewise greater protection from the outer air and less loss by radiation into needless kiln walls and atmosphere. Absence of grate bars and furnace arches does away with a perpetual source of delay, worry and expense.

The "human element," that greatest worry of all clay burning,—is by the use of this type of kiln reduced to a minimum. The flow of gas and heat being uniform, the kiln conditions and temperatures are under the absolute valve control of the ordinary operator and susceptible of the most accurate adjustment and record, all of which make it of great practical benefit.

"With the proven saving of over 60 per cent of the fuel required in many other types of kilns, this type of kiln has already proved to be a great aid to progressive clayworkers."

Among the most successful kilns of the above type is the Youngren producer gas-fired kiln, built by the C. W. Raymond Co., Dayton, Ohio.

THIS SEASON'S CLAY SHOW RUNS 12 DAYS


Clay Products Exposition
For 1913 Feb.26 to Mar.8
FEBRUARY
MARCH
1913
1913
Everything in Clay from Art to Utility.
Open to Public 12 Days. Coliseum, Chicago.

THE second annual show of the Clay Products Exposition Company in Chicago, this coming winter, will extend over a period of twelve days instead of six days. With this settled and the fact that the date shall be from February 26 to March 8, Secretary Hopley and his assistants are beginning to put into effect the preliminary plans for the event.

The prospectus for the big show is in the hands of the printer and will be issued and mailed within the next two weeks. This announcement will outline a broadened policy for the exposition and shows that the executive board has determined to eclipse last winter's efforts.

In addition to many new features, which will not only interest the visitors but assist in creating a demand for clay products, the lines represented will be extended and, where other branches of the industry were merely represented last season, full displays will be presented. This is true, particularly of the pottery interests.

It is the purpose of the Exposition Company to secure more active interest and co-operation from the pottery people and the assurances from representative companies throughout the country indicate that some unusually attractive exhibits will be installed.

The effort to bring a national good roads congress to Chicago during the exposition is also meeting with excellent success and the paving brick people will be asked to co-operate in making their exhibits especially attractive to the members of this congress. It is proposed to show exhibits of street and country road paving, emphasizing the best methods of brick construction by practical demonstration. This one feature of the show will be a great aid to the paving industry inasmuch as the good roads congress will bring delegates from all sections of the country. When they leave Chicago they will carry home with them all the good arguments for brick and a clear idea of what brick means in the way of durability and economy.

The architectural end of the exposition is going to be given more attention, also. Last season a prize was offered for a brick bungalow that would embody all the best ideas in fireproof construction. The price limit was fixed at $3,000, and the building, which was erected in the Coliseum, was given away in a guessing contest. This year it is proposed to set the limit at $3,500, which is expected to bring out designs for a larger and better finished home for the modest homebuilder.

Prizes also are to be offered for the best home for the workingman, the same to be built in the Coliseum, from fireproof materials. It seems to be the idea of the average small investor that a brick house suitable for the workingman and his income cannot be built. This contest is expected to show that it is possible and that a modern, fireproof structure can be erected according to the most approved designs. In Chicago, particularly, is this lesson needed, where there is a campaign on to widen the fire-limit zone. Opponents of the plan argue that an extension of the fire limits means the abolition of the frame dwelling for the workingman, and that with the abolition of the frame dwelling there will come the necessity for the small wage earner to move to a territory without the fire-limit zone.

The erection, at the show, of a prize brick house within the means of the workingman will disillusionize these misguided people. Secretary Hopley says that the house he has in mind will not cost the builder ten per cent more than for the frame shack he is erecting today and he will have the satisfaction of knowing that his home is not only fireproof but durable.

Another feature that is to be added to this year's show will be the prizes offered the exhibitors. One prize is to be given for the most novel display; another for the most beautiful display; another for the largest single display, and still another for the most practical display.

The Coliseum has been rented for a period of twenty days instead of ten days as was the case last year. This is done for the purpose of protecting exhibitors. Many of the exhibitors last season, complained of the short time allowed them in which to erect their displays. Others complained of the over-time charge of the union workmen who were forced to work in day and night shifts to complete the exhibits in the allotted time. This extra time practically gives exhibitors nine days in which to install and take away their exhibits.

Allotment of space to exhibitors, Secretary Hopley informs "Brick and Clay Record," will be made Sept. 20.

TESTING OF REFRACTORIES IMPORTANT

Increasing Use of Fireproofing Makes Imperative Thorough Investigation of Load-bearing Capacity—Government Engages Experts in Testing Department

By **HARTLEY M. PHELPS**

THE daily increasing use of clay refractories, due to the enormous growth of the large cities and towns of the United States, makes a thorough and unfailing test of such materials of the highest importance to both the builder and the owner of the building erected. Particularly is this so in view of the decreasing utilization of cement—and to a considerable extent concrete—brought about by numerous disastrous collapses of late years, of dams, bridges and other structures in which these materials were used.

To determine the load-carrying capacity of refractories at furnace temperatures is of prime import, and it is also essential to know the point at which distinct evidence of softening occurs. For refractories, of course, are used in the construction of fireproof buildings and in case of fire, must withstand intense heat. It is likewise important to know the chemical composition of the clays from which these refractories are made: what proportion is silica, what alumina, and what foreign matter.

These things are receiving very careful and painstaking attention at the hands of the experts at the testing plant of the Government Bureau of Standards at Pittsburgh; which plant occupies a portion of the colony of buildings used by the Bureau of Mines. Results of the highest value are being attained. Not only are refractories being tested, but samples of clay from all parts of the United States are being subjected to exhaustive physical, chemical and biological tests. The testing of loads is done by A. V. Bleininger, ceramic chemist, and G. H. Brown, his assistant; while the chemical researches are being conducted by A. J. Phillips, under the supervision of P. H. Bates, chemist in charge of the Structural Materials Testing Laboratory. In the latter work the methods of Dr. Hillebrand are used throughout.

Regarding chemical tests the following determinations are being made: Chemical analysis, crushing strength of brick on end in cold condition, softening temperature, porosity and true density.

Twenty brick of each brand were used; but for obvious reasons the names of the brands or their makers cannot be made public. All samples are designated by number. In this connection it is not amiss to state that the government is making these tests for its own benefit, as it is an enormous consumer of all kinds of building materials; but the results, being published in bulletins and bound volumes are at the disposal of the public, and are thus made of direct benefit to the manufacturer and the purchaser, as well as being useful contributions to science and the industrial arts.

Determining the Value.

To determine the value of fire clay it is important to consider the purpose for which it is to be used. Thus, clay to be made into brick to be utilized in the construction of the top of a blast-furnace lining, where resistance to abrasion at a low temperature is the consideration, do not need to be of a high refractoriness. In other words, conditions to be met with must be clearly recognized.

Refractoriness is the principal demand made of fire-clay products. Other desirable physical properties may often be obtained by proper treatment in the manufacturing process, such as the correct proportioning of flint, plastic fire clay and grog; with reference to sizing and intimacy of mixture, and especially the degree of firing.

The testing methods available for the examination of fire clays are the direct determination of the softening temperature, of the temperature-porosity relation, and chemical analysis. In attempting to put down specific requirements to be met by fire clays at least two classes must be distinguished:

Number 1—Fire clay of high refractoriness. Number 2—Fire clay of somewhat inferior refractoriness, but necessary as bonding material. Plasticity is urgent in number 2, for without a well-developed bonding quality it becomes practically valueless. With reference to number 1, an artificial minimum refractoriness must be assumed.

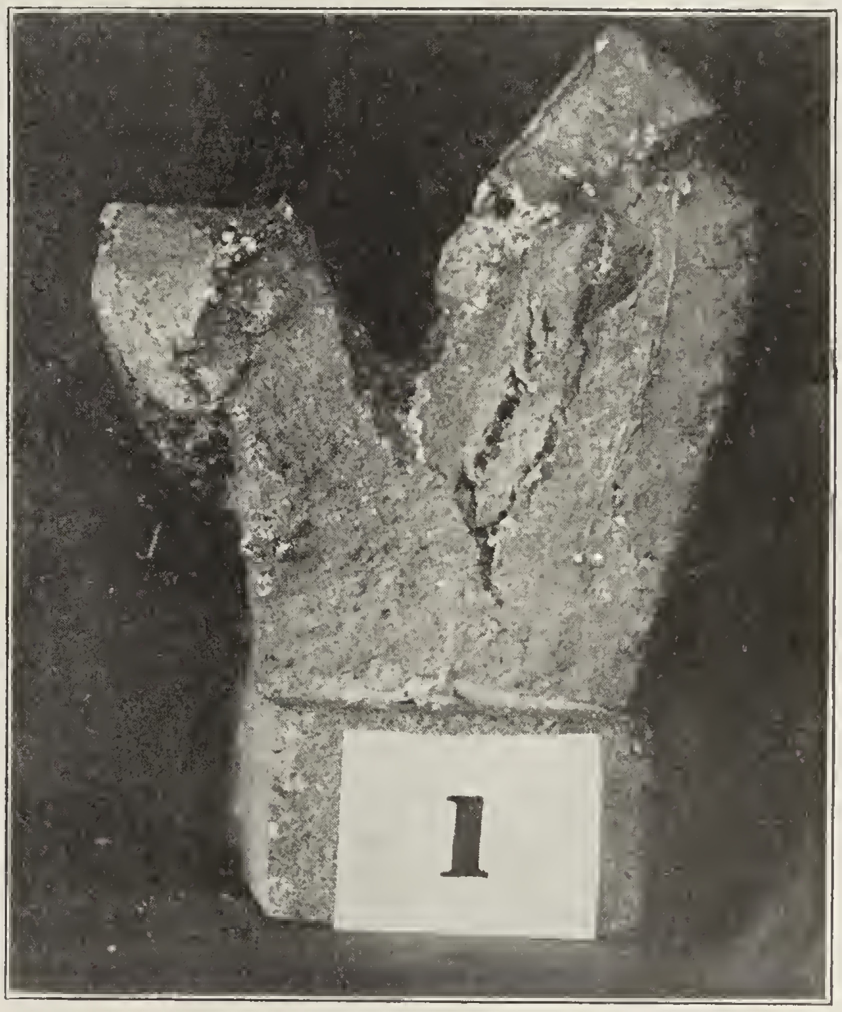


Fig. 3—Failure of Specimen No. 1.

Classification of Clays.

As to the classification of number 1 fire clays with reference to their temperature-porosity curves it may be that the porosities in themselves are not of special significance, but the rate of porosity decrease is of primary importance.

Clays possessing a lower softening point than that of a satisfactory bond clay may, of course, be used to bond high-grade flint clay; but the result, in spite of the fact that the high-grade clay is far in excess of the low-grade material, does not make for high quality. In many cases it would be advantageous to improve the standing-up qualities of the bond clay by intimate grinding and admixture with flint clay.

Clays do not possess a melting point but gradually soften until deformation takes place. The viscosity is diminished at the same time from that possessed by the solid body to the degree of fluidity shown by the fused mass. It then becomes simply a question as to which stage of the decrease in viscosity we consider the softening point.

For all practical purposes, a fire brick is completely distorted at temperatures considerably below that at which it "goes down" when tested in the laboratory furnace. Thus the knowledge that a certain material softens completely at a given temperature does not tell us when its viscosity has been decreased to such a degree that it is unable to stand up under furnace conditions. Hence, in order to overcome the viscosity effect it evidently seems desirable to bring about testing conditions which give expression to the practical failing point.

Load Test Applied.

This is accomplished by the application of a load upon the specimen under test. This load, however, should have some relation to the requirements of practice. It should not be so large as to tax even the compressive strength of the specimen in the cold condition, as was done by Haag, who employed a load of about 500 pounds per square inch, nor should it be smaller than the maximum loads required of refractories in actual use. The loads should be somewhat greater than the maximum furnace loads, since obviously the time element, which is such an important factor under actual conditions, cannot be reproduced in the laboratory. To be useful, at all, the time of the test must be short enough to enable it to be carried out without too much delay.

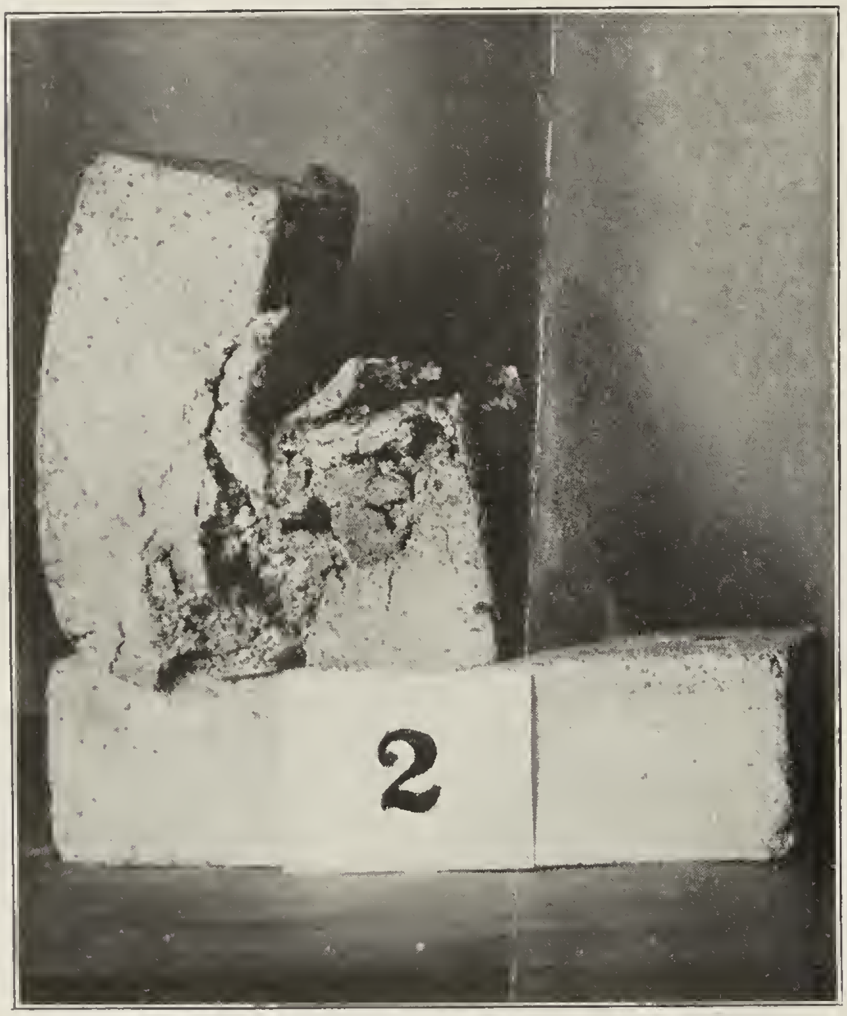


Fig. 4—Failure of Specimen No. 2.

Tests have been made upon the compressive strength of fire-brick specimens at 1,000 degrees C by Gary, who found that at this temperature the material showed greater strength than at atmospheric temperatures. In one case, the crushing strength cold, was 169 kg., while at 1,000 degrees it rose to 218 kg. per sq. cm. This work, the account of which was published after the present investigation was completed, shows clearly that at this temperature, no lowering of the viscosity is to be observed.

Viscosity Important.

Viscosity is an important factor in the behavior of fire brick and other clay refractories under the load conditions which prevail in industrial furnaces. While the loads imposed may be slight and would be insignificant as far as the strength of the product in the cold condition is concerned, they become an important factor at elevated temperatures. Thus, while a fire brick may show a compressive strength of 2,500-3,000 lb. per sq. in. at atmospheric temperature, it will possess but a small part of this strength at a temperature of, say, 1,300 degrees C.

This decrease in resistance to deformation has a more important bearing upon the durability of refractories than is generally realized. Conditions of strain prevail in almost any part of a furnace, especially in crowns, bridge walls and bags, checker work, retort benches, muffles, etc. To these must be added the strains imposed by expansion and contraction due to temperature changes and those due to other causes. The loss in resistance to compression is evidently due to the lowered viscosity, caused by the gradual softening of the clay due to vitrification and incipient fusion. This viscous state becomes more and more prominent as the temperature rises until the point is reached when the material can no longer support its own weight. The rate at which a clay approaches this semi-liquid state with increasing temperature may be said to be roughly proportional to the rate of vitrification, i. e., the speed with which the pore space closes up due to partial fusion. The contraction is the result of surface forces tending to reduce the area of the body to a minimum.

A fire clay low in fluxes, i. e., titanium oxide, ferric or ferrous oxide, lime, magnesia, potash and soda, showing a low rate of vitrification will consequently be affected less under furnace conditions with increasing temperatures than one higher in basic constituents.

The testing, at Pittsburgh, has been confined to fire-clay brick, the treatment of silica and magnesite brick and other refractories not being undertaken. Full-size brick were used.

The work was with moderate loads at average furnace temperatures. A number of experiments were carried on with loads varying from 175 lb. to 25 lb. per sq. in. Likewise, preliminary tests were made as to the best temperature, it being desired to adopt that point at which distinct evidence of softening occurs. After preliminary experimentation two series of tests were made; one at 1,300 degrees C and load of 75 lb. per sq. in., and another at 1,350 degrees C and 50 lb. per sq. in.

The Test Furnace.

A furnace was built, with an interior space of 20 x 20 x 21 inches, heated by means of eight Fletcher burners, which were supplied with natural gas and compressed air. The combustion gases escape through holes along the back side of the furnace. The back wall consists of a movable door made from a heavy wrought-iron frame, lined with fire brick. The frame is hung from two rollers, running on an overhead track, so that it can be easily moved. The brick to be tested is firmly placed on end upon a heavy fire clay block about nine inches from the door and fixed in position by means of fire clay mortar. high-grade fire clay which extends through a hole in the arch of the furnace. The load is then applied upon a Half of a chrome brick is then placed upon the test specimen, and on top of it a long cylinder made from cast-iron knife-edge plate by means of a steel I-beam 9 feet long, with a distance between the pin taking the upthrust and the fulcrum and 6 feet between the latter and the point of load application. The weight of the beam is 155 lb. The weight applied consists of a wooden box containing the necessary weight of shot. The beam was first calibrated by means of a platform scale. The pin at the end of the beam passes through a cast-iron block sliding in a channel iron provided with a slit and a heavy fastening bolt. Two bolts are arranged on top of the block so that it can be lowered by loosening the fastening bolt and tightening the top nuts. In this manner the I-beam may be kept level throughout the test, thus avoiding side strains upon the brick.

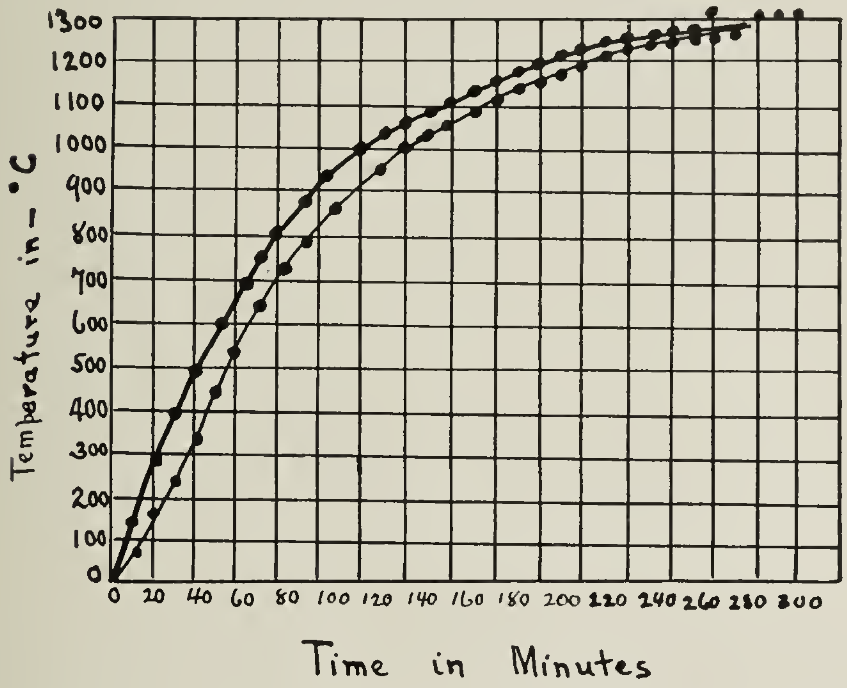


Fig. 1—Time Temperature Curves of Outside and Inside of Fire Brick.

Through an opening in the door a thermocouple was inserted, which is placed as close to the brick as possible.

The first point it was necessary to determine was the rate at which a fire brick could be heated up and the time required until the interior of the test specimen had assumed the temperature of the furnace. For this purpose a fire brick was taken and a hole drilled to the center of the brick. A thermocouple was then inserted and the hole well plugged up, leaving the couple covered for some distance away from the brick. Another couple was placed close to the brick, but not touching it. The outside junctions of both thermocouples were placed in test tubes immersed in a beaker of water, the temperatures of which were read regularly for making the necessary correction. Figure 1 shows the time-temperature curves resulting from this test, which indicate that after 285 minutes, at the rate of heating followed, the temperature inside the brick was the same as that on the outside. Since it was necessary to conduct the test with reasonable rapidity, owing to the limited time during which power was available, the time-temperature curve shown in Figure 2 was finally adopted.

In the course of this work more than 35 brands of fire brick were tested, as well as specimens made in the clay products laboratory from different fire clays. Samples were obtained from manufacturers located in Pennsylvania, Maryland, Ohio, New Jersey, Missouri, Kentucky and Colorado.

Crushing Strength Determined.

The usual method of determining the crushing strength of the brick at ordinary temperature—by placing them in the machine endwise—was employed. To obtain the softening temperature pieces of brick were chipped off and placed in a Fletcher gas furnace, using preheated compressed air and natural gas. For the higher temperatures a carbon resistance furnace was used, in which a muffle consisting of a body containing 85 per cent of calcined alumina and 15 per cent of kaolin was first utilized. Later, this composition was replaced by magnesite. Seger-Orton cones were used for the estimation of the softening temperatures. The results were checked in each case.

The porosity was determined by obtaining the weight of a dry piece of the brick, the weight of the same specimen saturated with water by boiling in vacuo, and the suspended weight. The results checked practically with the porosity, calculated from the true and apparent densities. The true density was obtained from 50-gram samples of the pulverized brick, under the customary precautions as to the removal of air by boiling in vacuo and making corrections for the final temperature of the water.

In the load test the beam was first raised as the temperature arose, due to the expansion of the furnace bottom and the brick; a quiescent stage was then reached, after which from 1,130 to 1.290 degrees C, a well-defined deflection began, caused by the contraction of the brick. In some brick, this deflection continued at a very slow rate or reached a state of equilibrium some time after the temperature had been raised to 1,300 degrees C. This kind does not fail under the conditions of the test, and the later the deflection the more apt is the brick to stand up.

The materials failing under the tests showed a more or less early start in settling, and the rate at which this takes place increased with the temperature, till finally it became so rapid that it was impossible to keep the beam level. Failure then is merely a matter of minutes and takes place very suddenly. In every case, softening precedes failure.

Some of the brick would unquestionably have been deformed badly on long time tests, which it was impossible to carry out under the conditions of the plant; but in several cases where the time of testing was extended considerably a kind of equilibrium was reached, after which no observable change took place. It is very likely that, in these cases, solution of the more refractory portion of the brick took place which stiffened up the bonding material. Siliceous brick, low in fluxes, remained perfectly straight, shrinking but little.

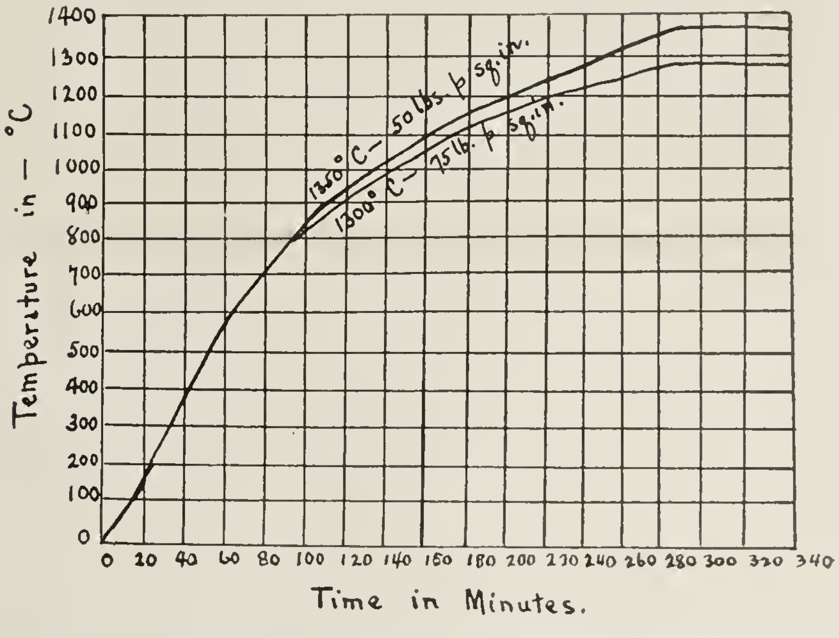


Fig. 2—Time Temperature. Plat of Schedule Adopted for Load Task.

A comparison of the initial cold crushing strength and the load behavior showed no apparent connection, but the fact was brought out that low initial strength is a handicap. The tests proved that well-burned brick stand up better than soft-burned products. This is due not only to the greater compactness of the body, but also to the change in the composition of the bonding material where such is used. In other words hard burning will cause the usually-decidedly less refractory, plastic clay to dissolve some of the fine part of the better material (flint clay), thus increasing its own refractoriness and hence its resistance to load conditions.

The decided variations in crushing strength, at atmospheric temperatures, which are observed seem to indicate widely varying conditions as to the initial water content employed in slop molding, and there is no doubt but that there is considerable room for improvement with regard to the development of greater mechanical strength by proper grinding and pugging.

The tests were not only useful in determining the load-carrying ability at furnace temperatures but also served as measures of the refractoriness of a certain product. In considering furnace conditions it is at once evident that everywhere pressures are to be resisted and not only those due to loads, but also the compression and tension stresses caused by thermal expansion and contraction. The higher the furnace temperature the more rapidly is the load-carrying ability reduced until finally the refractory is unable to support its own weight.

The Load Test.

The load test, therefore, measures the viscosity of the fire-clay bodies at a certain temperature. Since any good refractory should possess sufficient rigidity at the temperature at which it is to be used to carry the load or to resist the pressure it is called upon to meet, it is evident that a fire brick lacking in this respect is as inferior as a material showing a low softening temperature.

In conclusion, it can be said that the softening temperature of fire brick specimens is not a safe criterion of the "standing-up" quality of fire-clay products. The ability to withstand a load test at 1,350 degrees C. with a compression of 50 lb. per sq. in., estimates the refractoriness of a material under working conditions. Failure is considered to have taken place when the specimen shows marked deformation or contracts more than one inch, referred to the standard length of 9 inches.

Improvement by Grinding.

It has been shown that bond clays of inferior refractoriness can be improved by thorough grinding with flint clay or some other heat-resisting material, low in fluxes.

Refractories should be burned to as high a kiln temperature as possible, at any rate not below cone 10 and better at cone 12 (based on Seger cones).

A good initial compressive strength is desirable for fire brick subjected to load conditions. When tested on end at atmospheric temperature, a crushing strength of more than 1,000 lb. per sq. in. is required.

The load test cannot be taken as the sole criterion of the value of a refractory; but the softening temperature and the chemical analysis must likewise be considered.

While the load test is important for industrial practice, since conditions of direct and transverse compression and tension exist under nearly all furnace conditions, it is less valuable where the loads imposed are insignificant.

Figures 3 and 4 show the results of the load test of two specimens of fire brick, at 75 pounds per square inch, at 1,300 degrees C. It is shown by the illustrations, that where the brick were badly distorted and crushed, in each case, a certain degree of softening took place, as is clearly indicated by the curved surface. It is evident that these brick attained a viscous condition, in which they were not able to carry the load imposed upon them, though the latter is small as compared with the crushing strength at the atmospheric temperature, which averaged, for all specimens tested, 1,520 pounds per square inch. Inspection of the failures shows plainly that the more refractory flint clay has not softened to the slightest extent. The grains have lost none of their original identity. They seemed to have slid upon each other, the bond clay behaving analagously to a lubricant. From this it follows that no matter how excellent the major constituent of the brick may be as to refractoriness, if the bond clay is too deficient in this respect the load-carrying power of the product is impaired. In other words, as far as this property is concerned, a fire brick is not any better than its weakest constituent, unless the mass is made homogeneous by finer grinding and blending.

HOW ONE COMPANY SOLVED WET SHALE CRUSHING PROBLEM

CRUSHING wet shale quite often presents a problem to the clay-worker so difficult to solve he feels like giving up in despair, and the fact that in many sections there are deposits of such excellent quality for high-class products, which resist the ordinary methods of grinding, makes the perplexities twofold.

The Remillard Co., of Oakland, Cal., found just such a condition in one of its three yards. At Pleasanton and San Jose it has a very fine grade of shale and clay, which practically needs no grinding. It was able to manufacture brick cheaper at those two plants than it could at the Greenbrae yard. The price of common brick being lower in the San Francisco market than at any other locality, and competition being very keen, the company was confronted with a serious problem. The board of directors held a meeting and decided that they must do one of two things, either make a change in the Greenbrae plant that would make production profitable, or close the yard.

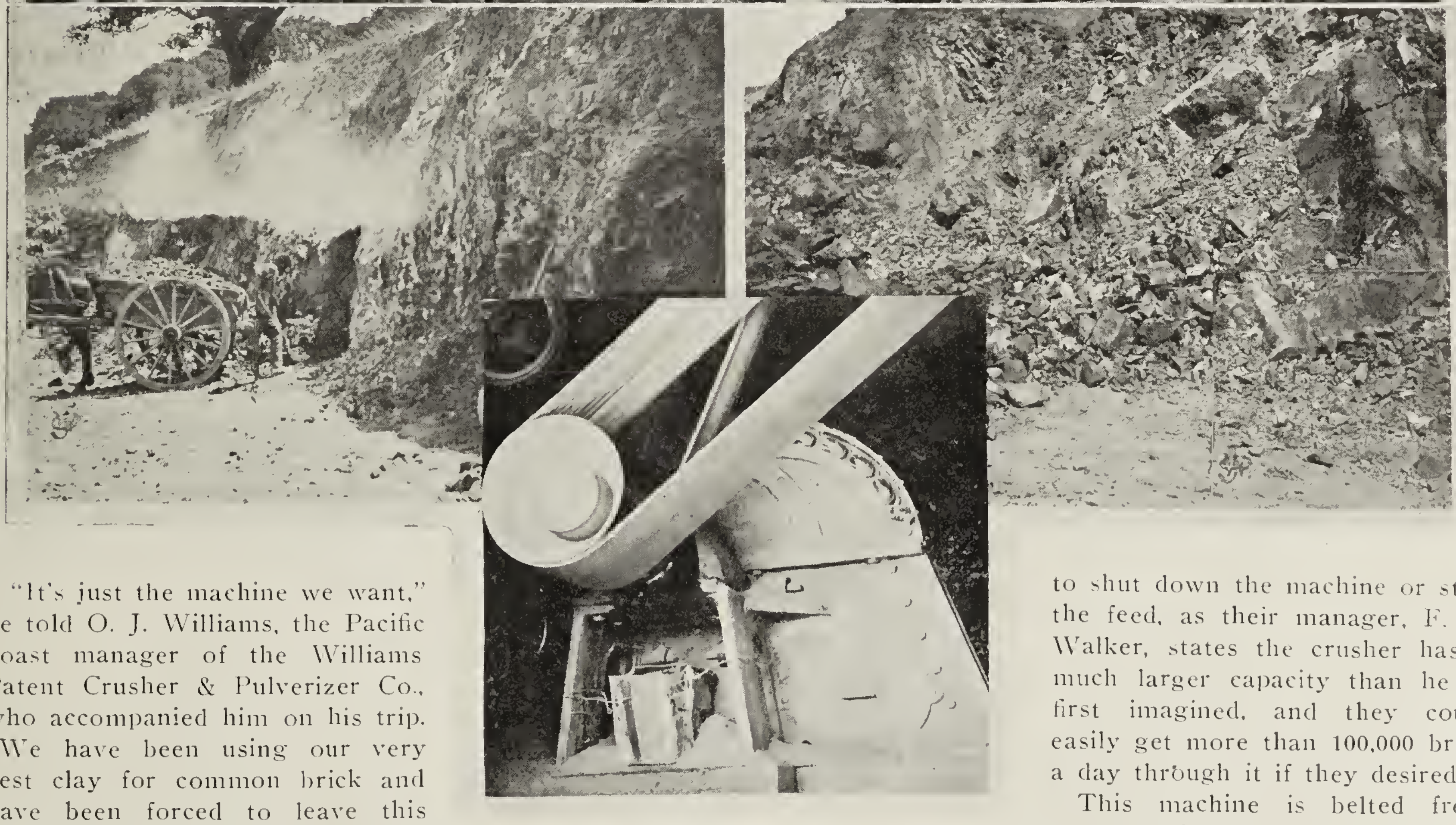
They made the change and this is how they did it:

Someone suggested that a representative be sent to the Carquinez Brick & Tile Co.'s plant near Port Costa, Cal., where similar conditions had once existed. The exceedingly hard material the Carquinez plant is grinding without the slightest effort was fully described in the January 1st, 1912, number of "Brick and Clay Record," and this article, with its illustrations, probably had considerable to do with the decision to investigate the equipment.

Finally the superintendent of the Remillard company went to Port Costa. He found the Carquinez people had installed a Williams No. 8 deck sweeper. He spent considerable time in his investigation, watching the grinder doing its work under various conditions, and was convinced he had found the solution to the Greenbrae problem.

At Greenbrae, the Remillard people had been operating a roll crusher which would take only small pieces of shale.

THIS IS WHERE WET SHALE CRUSHING WAS DIFFICULT WORK



"It's just the machine we want," he told O. J. Williams, the Pacific Coast manager of the Williams Patent Crusher & Pulverizer Co., who accompanied him on his trip. "We have been using our very best clay for common brick and have been forced to leave this hard shale on the dump. Now, we can use this shale for the common brick and utilize our clay for more expensive products."

The Remillard superintendent returned to Greenbrae and made his report. The company, acting on his suggestion, bought the Williams No. 6 Deck Sweeper and installed it. This machine was sold with an absolute guarantee to reduce the shale at the rate of 60,000 brick per ten hours. The Remillard people operated the machine several days, beginning with very small pieces of shale. Seeing that the machine handled the shale excellently, they gradually increased the feed size until now they do not hesitate to feed any size that will go in the hopper, the hopper being 40x20. Occasionally they are required to shut down the machine or stop the feed, as their manager, F. B. Walker, states the crusher has a much larger capacity than he at first imagined, and they could easily get more than 100,000 brick a day through it if they desired.

This machine is belted from an electric motor. The actual power consumed is approximately one-half to three-fourths of a horse power per thousand brick. The ground product is carried by a bucket elevator to a revolving screen, then to the mixer, and, by gravity, falls to the brick machine.

The Remillard company is also equipped with a small auxiliary steam plant from which they will this winter get an ample supply of steam to keep the deck sweeper heated in order to handle the wet clay. As the clay is taken from an open bank, and excessively heavy rain falls in the San Francisco Bay region each winter, the reader can appreciate the hard material it will be necessary to grind.

FACE BRICK BURNED WITH PRODUCER GAS

Rectangular Gas-Fired Kiln, Interesting Feature of Georgia Plant, Main Points in Its Construction Described

One of the most efficient southern brick plants is that of the Legg Brick Co. at Calhoun, Georgia, manufacturing a high grade of red face brick from shale. The general manager and principal owner of the plant is L. N. Legg, a practical brick man of twenty years' experience. Mr. Legg began work at the plant of The Calhoun Brick Co., then an open yard, making brick by hand and burning in daubed kilns. Since then he has had experience with various other types of kilns, manufacturing many different kinds of brick. He organized the Legg Brick Co. about six years ago. The plant originally included rectangular and round down-draft kilns, which were in continuous operation, burning face brick, until September, 1911, when they were abandoned in favor of the Legg continuous kiln.

The Legg Brick Co. owns an extensive shale deposit adjacent to the plant. The shale bank is several hundred yards wide and more than half a mile long, with an average depth of thirty feet. Hard and soft shale are found in the correct proportion, there being very little overburden and only an occasional strata of lime rock. The quarry is now being worked by hand, but the increased capacity contemplated will doubtless necessitate the installation of a steam shovel in the near future. The quarried shale is loaded into dump cars, which are drawn by cable to an elevated track and dumped into the storage bins. From there the raw material is carried by an endless belt conveyor to two 9-foot dry pans, then elevated and carried over screens which deliver it to other storage bins, from which it goes to a four-mold dry press. The green brick are carried directly from the press to the continuous kiln, where they are stacked thirty high, 105,000 in each compartment.

Continuous Kiln at the Legg Plant, from Which Brick are Being Loaded Directly from Kiln to Car.

The design of the Legg kiln permits filling from one side and emptying from another, so there is no conflict between the gang which handles the green brick and that which takes the burned brick out of the kiln. The railroad runs parallel to the kiln, on one side, so the brick may be loaded directly into cars from the kiln. The storage yard is just beyond the track, which is crossed on movable gangways when brick are to be stored.

The plant is now operating at a capacity of 20,000 brick per day. This will soon be increased to 35,000 per day by improvements now almost completed. The dry press will be supplanted by a brick machine and a cutter, making side-cut impervious brick which will be dried in a six-tunnel dryer before going to the kiln. The dryer will be heated by the exhaust from a 16x36 Corliss engine which drives all the machinery.

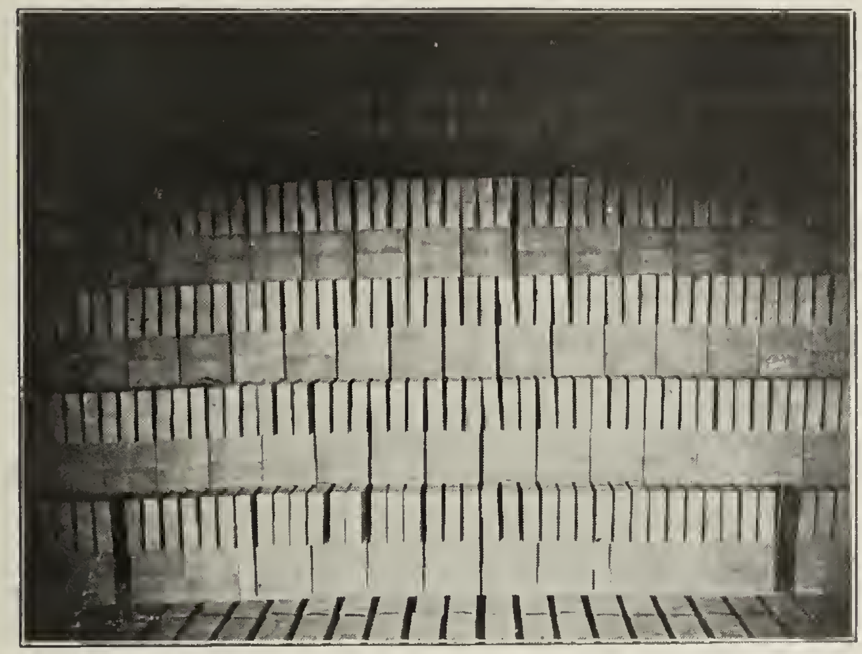
The Legg continuous kiln, as now operated, has six compartments; six more will be added as soon as possible, making the ultimate capacity of the kiln 60,000 per day.

This plant operates every day in the year, regardless of weather, everything from the shale storage to the brick storage being under roof. An indication of progressive spirit and substantial co-operation with home industry is shown by the fact that, wherever conditions permit, every square foot of roofing used by the company is tile made in Georgia.

The continuous kiln in use at this plant is said to combine the advantages of the individual rectangular down-draft kiln with those of the continuous gas-fired kiln. The continuous feature is introduced without sacrificing the advantages of accessibility and even heat distribution of the individual down-draft kiln. Consistent with the most approved practice, the kiln is fired with producer gas, thereby reducing labor cost by concentrating the fuel supply at one point and improving the quality of the output by easy regulation and even distribution of the heat, which could not be approached in direct-fired practice. The kiln is the equivalent of a series of rectangular down-draft kilns, gas fired and connected by flues. The heat, radiated by a chamber of cooling ware, may be utilized for heating air, which in turn may be used for drying out, or "water-smoking," green ware or to support the combustion in a burning compartment, or both. The products of combustion from a burning compartment are carried forward to one or more compartments where the heat is absorbed by ware which is thereby preheated.

Description of the Kiln.

The gas producer is of the regular up-draft furnace type, connected with a main gas flue which has branches extending along each side of the kiln. Gas is conducted through valves into portable hoods which lead to the combustion chambers in the respective compartments. Heat is diverted by the baffle walls to the top of the compartment and then drawn downward through the ware and out through the lattice bottom, and through an exhaust flue, whence the hot products of combustion may be carried to the other compartments by diagonal flues leading to valved openings, and then to the main exhaust flue, which is connected with a stack or with a fan. The hot air flues have openings which connect through portable hoods with combustion chambers for the purpose of conveying air, which has been heated by being drawn through a compartment of cooling ware, to a compartment of green ware which is to be dried out. The flue serves to carry products of combustion from the end compartment of a series back to the first compartment, e.g., if compartment were being burned the products of combustion would pass through flue to compartment, the contents of which would be preheated thereby.



Chamber of Burned Brick Showing Construction of Kiln Floor.

Legg Continuous Kiln, Showing Gas Producers.

For the purpose of illustration, assume that two compartments are being cooled; the third is burning; the fourth is being preheated by products of combustion from the third; the fifth is being dried out, or "water-smoked," by hot air from the first.

The doors at ends and top of the first and second compartments are unsealed to admit air from outside. Hot air leaves the first through the compartments and goes through portable hoods and valves into flues; from these flues it goes through valves and chambers into compartment, from whence the air and steam go through a flue into main exhaust flue.

Top of Kiln, Showing Coal Storage and Top of Gas Producers.

Hot air goes through the diagonal flues and through valves into chambers, where it mixes with gas from main gas flues, thus supporting combustion and supplying heat that has been recovered.

The hot products of combustion leave through diagonal flues and enter the compartment through valves and chambers, being drawn downward through the compartment, which is thereby preheated, and out through flue to main exhaust flues.

Gas Conducted from Underground Flues to Burning Chambers.

From the above, it may be seen that a compartment filled with green ware is first thoroughly dried by air which has been heated by radiation from a compartment of cooling ware; it is then preheated by the hot products of combustion from a burning compartment; after preheating it is burned by gas, the combustion being supported by air which has been preheated by radiation from a cooling compartment. After having been burned, the compartment radiates its heat for drying or burning another compartment. The process is continuous, occurring in each compartment in regular sequence. An advantage claimed for this kiln is the arrangement of flues which allows any compartment to be cut out of its regular turn when necessary, the process being carried around through the other compartments without interruption.

The illustration shows a kiln of five compartments, whereas not fewer than six compartments are recommended for best results. A kiln with twelve compartments (each 16 ft. wide by 40 ft. long by 13 ft. high inside) would have a rated capacity of 50,000 to 60,000 brick per 24 hours.

The problem of expansion is carefully worked out by expansion joints, buck stays and constant-tension binding rods being placed to best advantage.

The output of the Legg plant is over ninety-five per cent No. 1 ware. The plant operates continuously, the fuel used being commercial bituminous coal.

The kiln, above described, is built so that it can be fired with producer gas, natural gas or oil, and, when necessary, can be fired direct through the same openings used for introducing gas into the combustion chambers. This last feature is utilized only in starting up a cold kiln. When the kiln at Calhoun was first started, the chambers were filled with green brick and to have fired in the beginning with gas would have caused serious damage, due to the formation of scum. The first and second chambers were therefore dried out with wood fires; by the time the third chamber was ready to be dried out, hot air was available from the first chamber and since that time the operation of the kiln has been as described above. The first chamber, started in this way, turned out to be a perfect burn. Although simple in every detail, the Legg kiln includes many patentable features, applications for which are now pending.

ROUND-EDGED PRESSED BRICK IN ARCHITECTURE

THE demand for novelty in facing brick has brought out many fads and fancies. Some of these are not only artistic but practical—others have little to offer than novelty. The wide mortar joint is one of the fads of the last season or two. It came into existence because of a desire on the part of the architect to bring "texture" into wall construction and thus overcome the blankness and uniformity of the severe lines of brick complained of so frequently in late years.

The wide mortar joint, however, failed in its purposes. A wall with twenty per cent mortar showing on its face repelled the eye but the severity of lines was obliterated at the cost of artistic effect.

To give this wide-joint effect, without the mass of mortar, the rounded-edged brick came into the market. Its popularity soon interested the dry pressed brick people and Chisholm, Boyd & White Co., constructed a special die for one of their patrons. The result was most satisfying. The desirable texture is produced without the unsightly mortar joints and instead is a recess which gives a light and shadow effect that relieves the plainness of the smooth pressed brick.

A number of the dry pressed brick makers have equipped their machines with the Boyd special die and are making the round-edged brick. One of the pioneers is the Fredonia Brick Co., of Fredonia, Kans. Its plant is situated in one of the largest natural gas fields in the world and has a capacity of about 35,000,000 common brick and 12,000,000 round-cornered pressed face brick per year.

The material used is a hard blue shale in inexhaustible quantities and the plant is furnishing its products to most of the finer residences and the better grade public buildings in its territory.

B. E. LaDow of Kansas City is the president and general manager of the company; F. E. Wear, vice president and treasurer; David Bowie, secretary and P. J. Oppen, superintendent.

To Mr. Oppen is due much of the success of the Fredonia plant, for it was under his supervision the round-edged dies were installed. He saw the possibilities of the novelty and the ready sale proves his foresightedness. He has had a long and varied experience in the brick-making industry. He was fifteen years with the Golden Press & Fire Brick Co., of Golden, Colo. Other positions he held were with the Colfax Press Co., the Fairview Brick Co., and E. E. Rowe & Co., all of Denver. Before taking charge of the Fredonia plant he spent two years in the factory of Chisholm, Boyd & White Co., thus giving him a practical idea of the machine manufacturer's end as well as the brickmaker's end.

The Fredonia plant is well equipped. It has thirteen up-draft kilns with 4,000,000 capacity; three down-draft kilns with a capacity of 240,000; a 24-track dryer using natural gas fuel; a 250 h. p. corliss engine; one Fate tile machine; one Fate special brick machine with a capacity of 250,000 per ten hours and a Bensing automatic cutter; thirty-nine Eagle dry pans, and one 4-mold Boyd dry press.

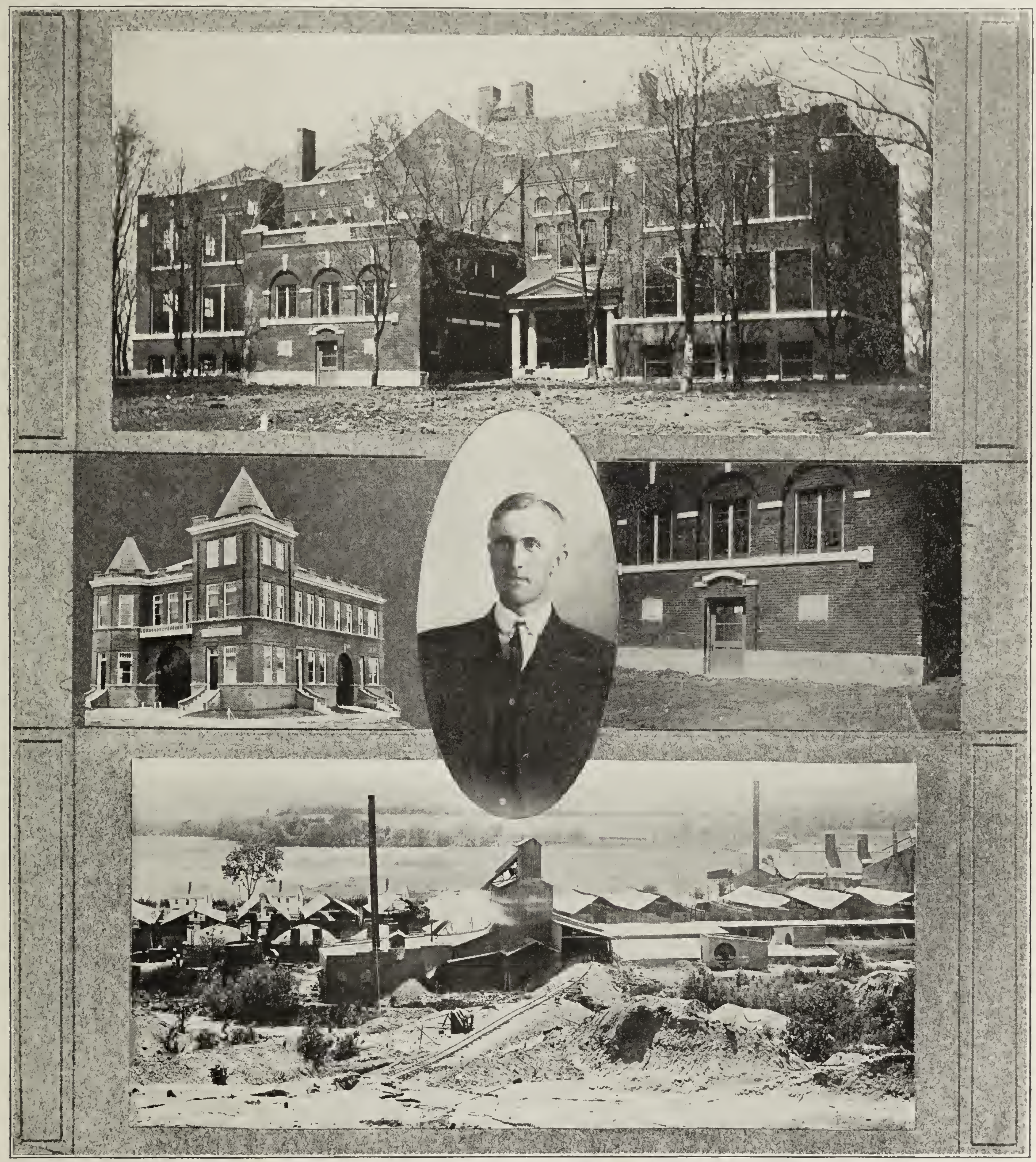
The product of the Fredonia plant is to be seen in many of the public buildings and more pretentious dwellings in Kansas and the great demand for this artistic facing material shows that it is meeting with great favor among architects and builders. One of the recent public buildings erected is the high school at Oswego, Kans. Another is the City Hall at Claremore, Okla.

ALLIS-CHALMERS EQUIPS MODERN PLANT.

Supplies All the Electrical Needs of Oakland, Cal., Paving Brick Company.

In an article on the "Electrically Driven Coast Plant" of the Oakland Paving Brick Co., Oakland, Cal in the July 15 issue of "Brick and Clay Record," the fact that the Allis-Chalmers Co., of Milwaukee, Wis., furnished the equipment was inadvertently omitted by the writer. It was the purpose of this journal to cover every detail of this modern plant and because of the courtesy of the Allis-Chalmers Co. in supplying us with the necessary data, and even going to considerable trouble in procuring some of the information for us, we should, at least, have given them the credit for making the Oakland yards what it is today—a type of the highest development in the clay product industry.

ROUND EDGED BRICK MAKE HANDSOME STRUCTURES



The Upper Picture Shows the Oswego (Kan.) High School Building, Faced with Round-Edge Pressed Brick Made by the Fredonia (Kan.) Brick Co. Beneath, at the Left, is Shown the City Hall, Claremore, Okla., also Faced with this Product. At the Right is a Closer View of the Brick Work. Below, is Shown the Fredonia Plant Where the Brick are Made. In the Center is P. J. Oppen, Superintendent of the Plant.

NEW JERSEY'S CLAY PRODUCTS INCREASE.

State Geologist Issues Bulletin Which Shows Rapid Growth in the Industry.

A bulletin just issued by State Geologist Henry B. Kummell, on the mineral industry of New Jersey, shows an increase in the sale of raw clay and its manufactured products for 1911 of $345,001 over the total for the previous year.

In 1910 New Jersey ranked third in the Union in the value of clay products. The total value of clay products for 1911 was $18,178,228; with raw clay added the total was $18,837,103. In pottery, Mercer County ranks first in the state, with a total of $7,713,599. This is 91.8 per cent of the total of the state. This pottery is all made in Trenton. Mercer County ranks second in the production of brick and tile, with a value of $758,319.

KILN PROBLEMS OF EASTERN PRODUCERS

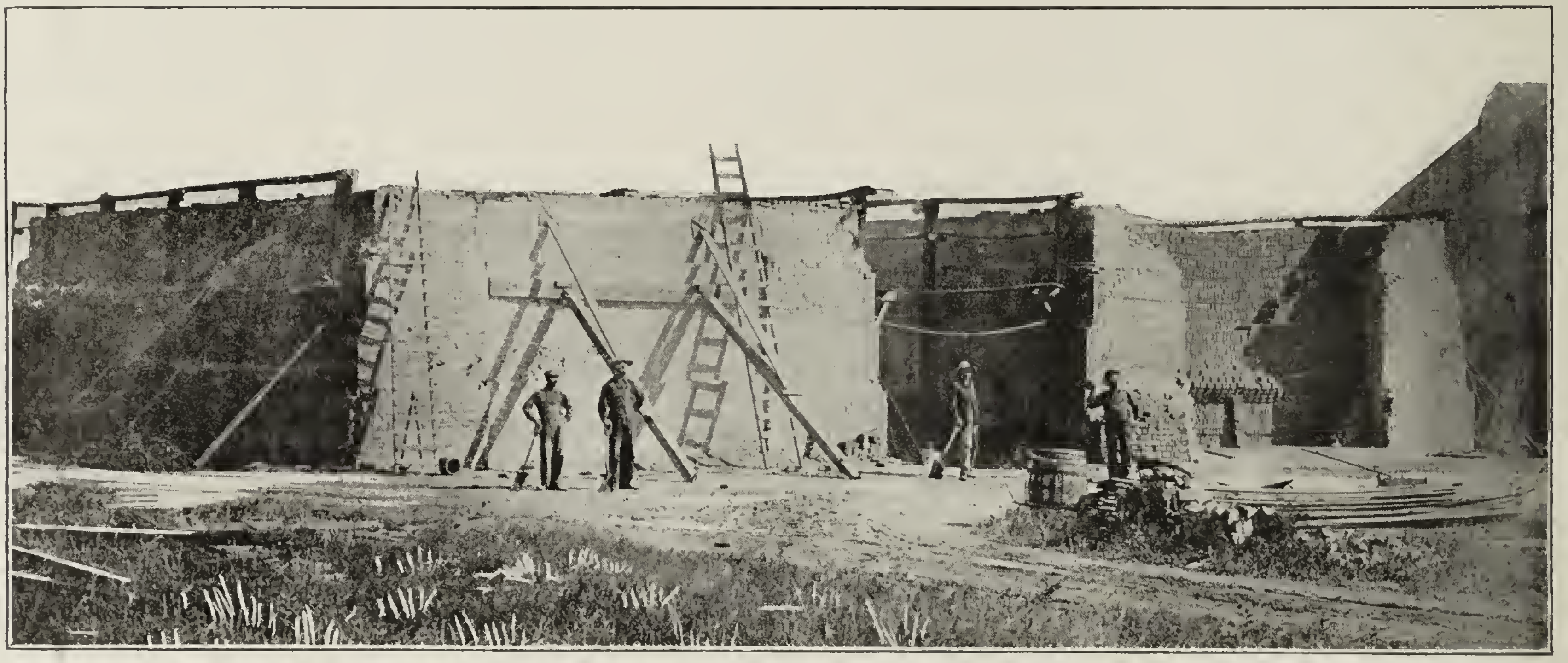
High Cost of Production Prompts Investigation of Burning Methods—Result May Revolutionize Firing Process

By ALLEN E. BEALS

When the Greater New York Brick Co. was organized a year ago last July, it was announced that one of the chief objects of its formation was to cheapen the cost of production of Hudson river common brick. Since that time, various phases of manufacture have been considered by the Board of Directors in conjunction with some of the leading engineers of the country specializing in brick production. It was the purpose of the leading men of affairs in the Eastern brick industry to put the problem of selling and the problems of manufacture upon an even basis and work out a more economical basis of operation in both departments.

During the recent past, the question of kilns has been forced upon the industry and considerable thought and study has been given to this factor in the manufacture of brick of late.

When the late John M. Thatcher assumed the office of Superintendent of Buildings in the borough of Brooklyn, N. Y., he caused an investigation to be made of the extent to which "light hard" brick were used in that part of New York City and his findings caused him to issue an order prohibiting the further use of this material in operations that came under his jurisdiction. This was followed almost immediately, by similar action on the part of the Superintendent of Buildings in Queens and later by an order limiting the use of that kind of brick in certain kinds of construction in Manhattan.



The Up-Draft or Scove Kiln—Type in Use in Many Plants Throughout the Country.

Then it was that the brick manufacturers began to find large quantities of discards piling up on their yards. Somebody had to pay for this waste, and it naturally fell to the lot of the ultimate consumer to meet it, in part, at least.

Eliminate Discards.

The most natural question then to be decided was how to eliminate this condition at the yards. For generations, scove kilns had been used. This type of kiln has its advantages and its disadvantages, and one of the disadvantages is that no matter how securely it may be walled up there are certain layers which invariably came out of the kiln "pale" or only "light hard." In other words, only the third layer was marketable, because the fourth layer usually was over burned. Therefore, the first, second and fourth layers represented unprofitable output and the third layer had to carry all the expense of production, pay overhead charges, towage, cost of bottoms and maintenance and, when to this was added the cost of handling the discard brick, at the yards, there was not much of a margin for profit left to the manufacturer, especially since that undefinable element of fuel cost had to be charged against the merchantable brick taken from the kilns.

There was one yard which made brick from a type of clay that would not burn to a deep red color, and if these brick were to be permitted to enter New York, it would open the flood gates to all kinds of doubtful brick.

This brought up the question as to whether the day of doom for the scove kiln had arrived, as far as the eastern situation was concerned. The western part of the country was visited, engineers consulted with producers everywhere and every effort made to find some way whereby a more uniform heat distribution could be so applied to the scove kiln as to eliminate this large waste. The investigation is still in progress.

One reason why the scove kilns have been so generally used in the East is, according to one manufacturer, "Because they have never been able to save up enough money to buy any other kind." Mr. Robert Main, one of the leading brick manufacturers in the East and an officer in the Greater New York Brick Co., however, gives his opinion as to the real cause as follows:

The Real Cause.

"Out west, the individual brick plant, as a rule, produces only a comparatively small number of brick, about 25,000 to 30,000 brick at a kiln burn. Here in the East we turn out from 500,000 to 700,000 brick a day. It is therefore apparent that with such an output, we would simply over-run our yards with kilns if we employed the permanent down-draft continuous kilns.

"Under the scove kiln process, we can burn an unlimited number of brick and, if necessary, shift our kilns as our clay banks become farther away from the old kilns.

"Of course, we have a large number of 'light hard' brick and 'pales' to take out, but in the saving of room, I question whether this is not in part compensated for."

The method employed is similar to that used in practically all the yards along the Hudson river. In the Central Jersey brick section, the individual and continuous down-draft kiln is here and there employed, but even then, the 'light hard' and 'pale' brick waste is said to be still a problem..

How Brick are Set.

The brick are set up in a scove kiln and burned in arches, several of which go to make up a kiln. The number of brick in an arch varies from 35,000 to 40,000. Each arch is from 40 to 60 courses high and in most yards fifteen arches make up a kiln.

The open portion of the arch is about 14 courses high, the brick above the arch are set three one way and three on top at right angles. They are kept slightly separated by putting small pieces of clay between them. The first row of brick on top of the arch is called the tie course and the first fourteen courses, including the tie course, over the arch are called the lower bench and the rest of the courses above are called the upper bench.

When the arch and lower and upper benches have been set, brick are laid flat over the top of the kiln and this is called the raw platting. On top of this, burned brick are laid at right angles to those of the raw platting. Hanging from the root of the kiln shed, at the same level, are a number of brick which serve as a guide for the height in building the kiln. A wall of two thicknesses of double coal brick is put around the outside of the kiln, scoving it, and this is daubed over with mud. The daub is to prevent any air entering except through the doors. The latter consist of an iron frame about 14 inches high, with an iron plate to close the opening. The frames are set in the courses of double coal brick, at the bottom of the arch on both sides of the kiln.

Double coal brick have six or seven times as much coal dust or culm in them as ordinary brick, and are used for placing around the outside of the kiln. It is claimed that the amount of coal in them supplies the necessary amount of heat to the outer portions of the kiln which are not sufficiently heated by the arch fires. It takes two setters and four wheelers about a day to set an arch of 35,000 brick and two more men will daub the outside of a 15-arch kiln in one day.

The Firing Process.

The firing process is about the same whether it is of wood, coal or oil. In the Hudson river district, the supply of wood has become exhausted and coal is now burned almost exclusively.

First, every alternate brick of the burned platting is stood on end to allow the water smoke or steam to escape as quickly as possible. A fire is then started in the mouth of each arch. One fire, if coal is used, is built to the windward side and another on the lee side of the kiln. These are slowly built up until they meet in the center.

Here is where the skill of the burner comes in. Some clay will be drier than other clay and the burner must govern these fires so as to keep his brick from "Lammying." Along the Hudson the time of "crossing" is generally from 40 to 60 hours. As the steam comes off the kiln, so the foreman governs his fires. The fires are increased until the water smoke changes to a bluish black smoke, and at this stage, the fire can be seen at night coming from the top of the kiln.

When this occurs the kiln is said to be hot and the brick shrink or settle and all the platting is turned down. It is in this stage that the oxides of iron are changed to anhydrous peroxid giving brick their red color.

The cost of burning with coal under this system is from 50 to 60 cents a thousand as compared with 40 to 50 cents in other types of kiln.

Losses Large.

In this type of kiln, there is frequently a loss of from 50,000 to 75,000 brick in a clamp of 500,000 brick while in a permanent kiln the amount of pale brick is said not to be usually over 25,000. If it were not for the element of space consumption, it would appear as though a change of kilns would result in a tremendous gain to Hudson river brick manufacturers and it is this point upon which the future policy of burning must eventually rest.

But to return to the subject of the marketability of light hard brick. Here in the east, an effort is being made to standardize common brick and to impress the architect and the builder with the necessity of specifying standard brick in all building operations.

About the only use to which a "light hard" brick can be put, with safety, according to one authority, is in wall backing or filling. At the present time, with so much second-hand brick available in large cities, due to the razing of old structures, builders prefer to use the latter instead of the "light hard" brick for this purpose.

To meet this tendency, it is the contention of brick manufacturers that a "light hard" brick, makes a better bond than a second-hand brick for filling purposes, because its pores have not been filled with mortar and are therefore more susceptible to "keying" with the mortar. But, in the case of the plant referred to where the clay does not always turn to the usual brick color, Frank L. Holmes, of the Greater New York Brick Co. caused some tests to be made which seem to show that the ruling of Mr. Thatcher, the late building Superintendent of Brooklyn, worked a hardship upon at least one brand of brick whether burned in a scove or permanent kiln.

Scientific Tests Applied.

LeRoy W. Clark, an engineer in the Rensselaer Polytechnic Institute, at Troy, made the tests in accordance with the Standard Specifications of the National Brick Manufacturers Association. Two brick were tried out, one 3:40 in. x 8 in. showed no failure under 2,758 pounds and another at 3,020 pounds a square inch. In the first case, the brick suffered a pressure of 75,000 lbs. and in the latter, 80,900 lbs. whereas a red burned brick, from a Haverstraw yard showed a crushing strength of 3,060 lbs. per sq. inch.

The viewpoint of the city authorities of New York is that if one brand of "light hard" brick is permitted to enter the city, others can be slipped in and it would involve constant testing and argument and delay to weed out the worthy ones from the unworthy.

The solution of this problem, therefore, is not in bickering with the Superintendent of Buildings, but in so improving the kilns that the element of waste per kiln output will be reduced to the minimum. In this age of invention and perfection in commercial science, it is the opinion of those who have been studying the eastern kiln problem that the element of light hard brick and pale brick waste in scove kilns can be met with good mechanical appliances for more evenly distributing the heat in the kilns at the same time, making the increased merchantable output meet the cost and maintenance of the apparatus.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECROD

VOL. XLI. AUGUST 15, 1912 No. 4

"IN UNION THERE IS STRENGTH."

From the day that Abraham Lincoln made his famous declaration that "In union there is strength" the American people have emphasized the necessity for co-operation. The slogan has been handed down in all walks of life. Not only in the body politic is this true, but we recognize it as a cardinal principle in our personal struggles, in matters religious, in our battle for industrial supremacy—in fact, in everything we do.

Men of great affairs, with varied interests at stake, gather together under one leadership, men that work to one purpose.

The church, with the world as its field, goes about its work systematically—concentrating here and directing its combined efforts there to get the best results of the great work it is carrying on.

The small business man, whose field is limited, sees the necessity of forming an association to advance his and his neighbor's interests.

Heads of great industries see the advantage of organization. They recognize that a perfect unification of their several departments means greater force in the struggle for new business and the fight to hold what has already been obtained.

And so it goes, wherever we investigate, co-operation is the key-note—concentrated action the slogan.

In the brick and clay product field how goes it? Does the word "co-operation" mean much? Is there perfect unity in the effort to sell—a concentrated force to make the wares popular?

There are organizations in the several branches of the industry—some that are achieving much—others that are failing in the purposes for which they were created, but, as a whole, there is a lack of unity, lack of concerted effort.

Clayworkers, wake up. Stir yourselves to the realization of presenting a solid front to your enemy—the foe of clay products. If you have an organization in your particular branch of the industry and it is not doing its share of the work, probe down to the root of the trouble—brush away the cobwebs of inactivity and get it into the limelight of usefulness.

The brick builders have an organization. The paving people have their association. There are unifications of some of the other branches, namely the fire brick people, the pottery owners and face brick manufacturers.

In some of these associations there is good work being done. In others their usefulness has been endangered or completely destroyed by lack of interest. But, wherever the interest lags there is room for improvement—there is a necessity for action.

The day of clay products is yet to come. Time has shown that they are the logical, sane, economical products for the field they seek to cover. But, without a hard campaign of educational work—without a united effort to let the people know that this is true, its foes will step in and, by a better organization in the promotion and publicity end, take the harvest that rightly belongs to clay.

It is not enough to set up a plant and make brick and try to sell them by personal work. If you sell your product you must create a demand for it. To create a demand you must awaken the people of a nation to the merits of your wares. It is not enough to establish a plant to make tile, or facing brick, or paving brick, or pottery or any of the other numerous products of the clay pit. You must see that the world knows you are making these things.

If you have an organization get in touch with it. If it is weak, if it is failing in its purpose, lend a hand and aid in putting it on the right basis for an active and useful career. You will profit by it in the long run. You will get your expenditure of time and money back many fold.

ROSEATE PROSPECTS IN DRAIN TILE FIELD.

From time to time, complaints have been made that farm lands, in the Central States, would soon be so thoroughly drained that the tile maker would soon be put out of business, but investigations and recent developments prove this to be far from the true condition. It is stated, on good authority, that Iowa farms are only partially drained. In many cases, a complete drainage system has been mapped out, but only partially completed. Other farms are drained, only in a limited way, the results of draining swampy sections, however, having proven so satisfactory and profitable that with the added profits, owners are planning to gradually drain their entire farms.

The reclaiming of swamp lands has been planned on an enormous scale, it being estimated that there are 12,000,000 acres of rich alluvial lands in Michigan, Wisconsin, Minnesota and Iowa, alone, awaiting the magic touch of tile to convert them from worthless bogs and swamps, given over to the duck hunter, into fertile fields, producing abundant crops, thus materially assisting in solving the problem of reducing the present high cost of living, which is working such hardships on the middle classes in our towns and cities.

In conversing, recently, with a prosperous Iowa farmer (and it is the exceptional one who is not prosperous) he stated that with some doubt as to the outcome, he tiled a piece of boggy land, formerly overgrown with reeds and rushes, and was much gratified when the crop raised the first year paid the entire cost of laying the tile. He is now planning to tile, practically his entire farm.

A farmer in Hardin County, Iowa, states that he raised seventy bushels of corn to the acre, the first year, on land reclaimed by tiling. In view of all this and following the wet spring, there seems to be no reason why the fall business in drain tile should not be a record breaker, and the manufacturer who has had the fortitude to keep his prices up in dull times will, it is hoped, reap his reward.

OHIOANS, BE UP AND DOING!

It behooves every one in Ohio connected with the clay products industry and kindred industries to be up and doing between now and Sept. 3 when the vote on the amendment to the state constitution comes up. This amendment is known as No. 29, and provides for the issuance of $50,000,000 in bonds for the building of good roads.

The paving brick people in Ohio, of course, are working night and day and the associations are doing some most excellent work in educating the people to the necessity of passing the amendment, but it is not enough that only the paving people show activity. Every man who is interested, either directly or indirectly in clay products, should take an active interest in the amendment and lose no opportunity to put in a telling argument for its adoption.

The issuance of these bonds for good roads is not only going to help the paving brick people in Ohio but it is going to set an example to the people of other states and the moral effect on general road improvement everywhere will be good.

It is suggested that every man in Ohio who is interested in the general advancement of clay products start out on a personal campaign. Letters might be written to friends and acquaintances in other cities citing the advantages of good roads; personal pleas should be made to all voters with whom you come in contact between now and election day, and friends, who have your interests at heart, should be enlisted in the work.

In every community, where there is an earnest clay product man there should be a hard campaigner. This self-appointed apostle of good roads can stir up interest in the subject by calling a mass meeting and addressing the voters. These public meetings will do more good than anything else. It is not necessary that you be an orator. Get up before your friends and tell them in an earnest, practical way the advantage of good brick roads. If you are shy on data or arguments, the National Paving Brick Association at Cleveland will be glad to furnish you with just what is necessary.

The stake at issue is so great to the general clay products industry that it is the part of wisdom and business sagacity for every one—whether connected directly with the paving brick end or not, to lend his hand and show an active co-operation. The advancement of any one branch of the industry will redound to the general good of the whole. The fire brick man, the building brick man, the tile man—in fact, every one who is making clay products or assisting in the making thereof, is duty-bound, if he has his own interest at heart, to be up and doing. Get in line today.

Almost any man's opinion contains something of value to the thinking man. Even if your neighbor's brick is not as good as yours, without doubt he could give you some valuable "pointers."

ENTERTAIN VISITING FACE BRICK MAKERS.

Cleveland Manufacturers Act as Hosts to Delegates of State Body.

Cleveland, O., manufacturers of face brick were hosts July 24 to visiting members of the Ohio Face Brick Manufacturers' Association, which convened in annual session in that city.

Following lunch at the Cleveland Athletic Club, at the conclusion of the meeting, the visiting brick makers were taken in autos on a sight-seeing trip about the city, terminating in a dinner at the Maplewood Beach Hotel on the lake shore.

The business meeting was devoted to a discussion of ways of widening the market for their product.

The president of the state association is F. H. Chapin, manager of the Hydraulic Press Brick Co. The president of the Cleveland association is W. A. Fay, manager of the Cuyahoga Builders' Supply Co.

A special committee, comprising W. A. Fay, F. H. Chapin and R. L. Queisser, had charge of the entertainment of the visitors.

"GOT THE BABIES MIXED."

"It takes a parent to pick out his own offspring at a baby show," says the F. T. Crowe & Co., building material dealers at Portland, Oregon.

By a sleight of hand, known only to the printing fraternity, the cuts in our last issue showing the office brick displays of the F. T. Crowe & Co. and of the Golden Fairview Pressed Brick Co. of Denver, Colo., were quietly and neatly exchanged, the credit for each being given to the wrong party.

We are glad to make the correction and give Caesar his just tribute.

The new thirty-four-story Union Central Life Insurance Building in Cincinnati, it is said, will almost rival the famous Singer Building in New York City, and will cost nearly $4,000,000. The construction will be steel and concrete with walls of brick and stone.

CLEVER ACROSTIC.

We are indebted to Henry C. Barlow, an architect of Dallas, Texas, for the following clever acrostic:

Clay products are practical, everlasting and indestructible,
Light in weight, easily placed and non-combustible;
Artistic in forms, and finish, no reinforcement required,
Your insurance reduced to lowest rates, by all desired:
Prices are right, and deliveries prompt for the masons,
Rapidly placed in position, without delay by evaporations;
One kind floats on water—non-conductor of heat—and resistor of fire.
Deadening of sound transmission, all owners this desire;
Unique in pattern, color, finish—"Potters' Art" combined;
Convincing to all—the most skeptically inclined,
"Terra Cotta" of large scale to be used in decoration,
"Stone Brick" valuable for its fire qualification;
Economical in construction, of parts exposed to heat,
'Xceptions barred; all details must be complete;
Positively no consideration will be entertained,
On changes of materials, as heretofore explained;
Strictly follow Plans, Details and Specifications,
In placing all materials of specified descriptions;
To the entire approbation of all parties interested,
In justice to the Owner and the capital invested;
O, wasteful Builders, can't you see a business proposition?
No waste of lumber, placing "Clay Products" in position;
CLAY PRODUCTS—non-conductor of electricity or heat,
O! can't you see, where clay products, have all others beat?

BUHRER INSTALLS LARGE KILN SYSTEM.

Erects One of His Shortened Types of 24 Chambers and a Drier of 176 Chambers.

Germany may be said to be the home of the brick kiln for the most marked advance in the history of kiln construction came with the invention, fifty years ago, of the Hoffman kiln, the precursor of the modern kiln and known today under a variety of names. That country, too, has held its own in whatever improvements have been made in the burning of clay products, due largely, no doubt, to the high price of fuel.

Many of the better kilns of today have been developed from the Hoffman idea. The Buhrer kiln is one of these and its maker, Jacob Buhrer, of Constance, Germany, gives Hoffman full credit. Buhrer, however, has developed his kiln until it barely resembles its predecessor. The first Buhrer kiln was erected in 1879 when, with Von Gunten, of Bettenhausen, Switzerland, he built the original shortened kiln. This kiln has been continually improved since and is pointed to as one of the most highly developed of this type. In 1863, Buhrer began the manufacture of oblong kilns with chimneys and these kilns are not only to be seen in Continental Europe but everywhere in America. Buhrer has erected to date, 1,600 of both types of these kilns, nearly two hundred of them being the shortened kiln with the Buhrer fan-draft system, his latest improvement.

Showing Four Buhrer Kilns at Redlich Plant, Goding, Austria.

One of the latest installations of the Buhrer kilns and driers was at the brick works of the Redlich Bros., Goding, just outside of Vienna, Austria, where a kiln of 24 chambers was constructed, with a drier of 176 chambers. One-half of this system was built on the ground floor and the other half on the second story of the plant.

The Redlich plant is one of the most modern in all Europe and compares favorably with the progressive American plants. In addition to the output of brick, ceiling tile, grooved tile, bull-nose tile and drain pipes are made. The latest improved machinery, all working automatically and handling the clay and its products in the most approved fashion, is used. All the machines and fans are actuated by electric motors, the power being taken at a central station, the dynamos of which are run by two steam engines of 250 and 500 horsepower. As a reserve there is a steam turbine available at 1,000 horsepower to insure against interruption. The yearly output of this plant is 60,000,000 pieces.

SHAKING GRATE SAVES MONEY.

Ash Pile Often Denotes a High Degree of Fuel Waste, Occasioned by Use of Poor Grades.

Economy and efficiency are the two things most vital to a manufacturer today. The part played by the coal cost in a brick plant is too evident to need any argument.

The use in kilns or boilers of the old wasteful, inefficient stationary grate is still common in all sections of the country.

In many plants, where the boilers are equipped with some good shaking grate, the old stationary grate is still being used in the kilns. This seems "penny wise and pound foolish," considering the large percentage of coal used in the kilns.

Many satisfied users state that a shaking grate, under a boiler, saves money, and a good one does. It is evident that a similar equipment of kilns would effect a still greater saving but this point is often overlooked by the manufacturer who is trying to produce more and better brick for a dollar. Many plants have tried some cheap make of shaking grate and discarded it because it was too unreliable—and the shut downs for repairs too expensive and too bothersome.

The grate made and marketed by the Martin Grate Co., has proven to be very satisfactory in a large number of clay working plants. The letters regarding same, from such well known concerns as the National Fire Proofing Co.; the Northwestern Terra Cotta Co.; The Iron Clay Brick Co.; the Portage Silica Co.; The Wabash Clay Co.; The Wisconsin Brick Co., and others, are evidence that the grate is adapted to the varying fuels and conditions which must be met by any successful grate.

The manufacturers using this device claim an average saving of over 15 per cent on the coal bill and this saving will pay for the grate several times over each year.

Those compelled to burn a high grade coal with poor grates, with ash piles showing too much waste and repairs too frequently required should write the Martin Grate Co., 347 So. Dearborn St., Chicago, Ill., who will gladly give you pointers on bettering your conditions, and will give you the benefit of fifteen years' exclusive grate and furnace experience.

The Green Fuel Economizer Co., of Matteawan, N. Y., is sending out a very handsomely printed and excellently edited catalog of the Green economizer. The book is more than a catalog for it goes into the subject of fuel consumption and fuel waste in power plants with a completeness that will be of material benefit to every brick and clay-worker whether he wants to install an economizer or not.

The Cary Brick Co., of Troy, elected the following officers: President and general manager, William N. Cary; vice-president, W. R. Palmer; secretary and treasurer, William L. Howland.

MANY ADVANTAGES IN OIL BURNING

Practical Article in Which a Comparison is Made of Oil With Other Fuels, Emphasizing the Economy of the Former

Oil as a fuel for the burning of brick and other clay products is attracting widespread interest. Many installations of oil-burning systems are being made throughout the country and are found highly profitable.

There is always a right way and a wrong way to do everything, and the installation of an oil-burning system in kilns is no exception. "Brick and Clay Record" has induced John Moroney, president of the Chicago Brick Machinery Co., to prepare an article on the subject. Mr. Moroney having had practical experience in the installation of such systems, what he says will have considerable weight.

By JOHN MORONEY.

WHENEVER it can be clearly shown to a man in any line of manufacture that a change in his process, or the installation of new equipment, will make either a marked saving in his cost of manufacture, or a noticeable improvement in the quality of his product, the matter is one that is worthy of serious consideration, and when both a saving and an improvement can clearly be shown, the practical man will not fail to look into the subject thoroughly and carefully.

The advantages of burning clay wares with oil instead of coal or other fuel insures, at least, two strongly marked savings—a large saving in labor, and a large saving in time of burning. In every case there is a noticeable improvement in the product. In many cases there is also a third saving in the actual cost of the fuel used. This, of course, depends on the comparative cost of coal and oil in different sections of the country. It frequently happens, however, that when the actual cost of oil is greater than its equivalent in coal, the difference is more than offset by the saving in time and labor and the improvement in the product. In fact, these are usually greater than any possible saving in the cost of fuel.

Must First Prepare the Oil.

These advantages cannot be obtained by simply putting in oil burners, tanks and piping. Trouble is likely to develop between the oil storage tanks and the burners which will neutralize most, if not all, of the advantages. In fact, the practice is about equivalent to feeding raw clay from the bank directly into the brick machine. Every clayworker knows that the quality of his product depends largely, if not mainly, upon the proper preparation of his clay on its journey from the bank to the brick machine. In the same way the efficiency and economy of the oil burning system will depend largely upon the character of the fittings and auxiliaries.

It is necessary, not only to prepare the oil by straining, heating, regulating and atomizing but to bring it into absolute control at every stage of its journey. For this reason the oil burning equipment should include the latest up-to-date atomizers or burners, also a system for heating the oil, regulators, strainers, oil meter for measuring the amount of oil used, and the pumps in duplicate, so that there may be no possible hitch or stoppage on account of accident to one of the pumps.

Labor-saving is one of the first advantages in favor of burning with oil. There is, of course, no unloading of coal from the cars, no wheeling of coal from the pile to the kilns, and no shoveling of coal into the kilns, with the attendant dirt and loss of coal. The carting away of ashes is also dispensed with. This does away with all the common labor formerly employed in the burning process.

With the proper oil burning equipment, as enumerated above, the one-day and one-night burner can do everything required in the burning of the product even on the largest plants. This saving is one that can readily be figured by every brickmaker.

Another advantage, not easily calculated and impossible to tabulate, comes from the raising of the efficiency of the remaining labor; the head and second burner being, of course, the most intelligent and responsible of the crew. This is to a very considerable extent, an insurance against blunders and avoidable accidents, which have injured or ruined many a kiln of clay ware.

The Matter of Time-Saving in Burning.

Time-saving is an all-important item on the brick yard, and one which most frequently makes the difference between profit and loss. Time saved in burning a kiln means, not only a great saving in the cost of the product, but it means that the kiln can be turned more quickly. This often saves a large investment in kilns, as fewer kilns will be required to do the work.

In burning with oil, a kiln can be heated more uniformly in much less time than with coal, as a slight turn of the burner will direct the heat to any point desired. When burning with oil the kiln is not affected by wind and weather, to anything like the same extent, as with coal. The heat can be held steadily at any desired temperature, and always be under the control of the burner. This tends to shorten the time of burning as well as to improve the product.

When the firing is done the work is done. The fire is simply turned out. It does not have to burn out and the kiln cools off more quickly. Taking all these items of time-saving together, from one to five days' time is often saved in the burning of a kiln, depending, of course, on the nature of the clay.

The improvement of the product, which almost invariably accompanies the use of a proper oil-burning equipment, comes mainly from the entire control of the operator over the fires, resulting in better distribution and closer regulation of the heat, and the holding of the heat at any desired temperature as long as required in any part of the kiln. With this system, the watersmoking is also done, with a far better control in the raising of heat throughout the kiln.

The result is a more uniform product, giving a greater percentage of high grade brick. In many cases the product also shows a better color when burned with oil, as frequently more or less discoloration has resulted from sulphur or other impurities in the coal used. This improvement in the product, although it is one of the most important advantages of burning with oil, is one that cannot be tabulated or definitely estimated in advance, as it is dependent so much on the nature of the clay and the kind of fuel that has been used. Nothing but actual practice can demonstrate it in each case.

In burning with oil there is naturally much less smoke than in burning with coal. The combustion is far more perfect, owing to the perfect atomizing, thus bringing all the oil in contact with sufficient oxygen for perfect combustion. After the kiln has been heated through there is no smoke, and none of the fumes which come from imperfect combustion of coals.

All Smoke and Soot Eliminated.

The fact that there is less smoke, even in the starting of the kiln, makes it safe to set the kiln closer than with coal, without danger of sooting. This putting of more brick into the kiln is also an item in the lessening of the cost of the product.

Another advantage comes to those using scove or clamp kilns, from the fact that these can be burned as wide as 40 ft. The oil, under the required pressure, reaches the center of a 40-ft. kiln, and yet with the proper oil-burning equipment is under complete control of the burner.

When burning down-draft kilns with coal it is necessary to clean the flues from one to three times a year on account of the accumulation of ashes. This is avoided when using oil, as it makes no kiln refuse, and the saving of even one cleaning a year is of value enough to be considered an item of saving.

In burning with oil it is not necessary to open the kiln doors, as there is no cleaning or firing, and there is no rush of cold air into the furnaces to cool down the kiln and cause the checking of the brick. This saving of wear and tear on the kilns and in checked brick is another item that cannot easily be tabulated, but it is a real saving.

In the matter of storage the advantage is largely in favor of oil. First, because only one-half the bulk of coal is required to do the same work, one carload of oil representing three and one-half carloads of coal. Second, because the storage tanks are buried in the ground, so that a very large storage can be obtained without taking up much space. The unsightliness and dirt of the coal piles is also done away with, and the space can be utilized in other ways.

This burying of the oil storage tanks under ground is required by the Underwriters' rules, as it gives absolute protection against fires, and as the tops of the tanks are in this way below the bottom of the tank cars, the unloading by gravity is cheaply done.

WHAT A MOTOR TRUCK DID.

Record Run Made by a Harvey Truck to Replace Broken Shafting at Schermerville Yards.

The Schermerville Yards of the Illinois Brick Co. were shut down, recently, at 3 o'clock, on account of a broken shaft. They immediately ordered a new shaft 5½ in. by 25 ft. of Messrs. Bliss & Laughlin at Harvey and had the same key-seated to replace the broken one. Messrs. Bliss & Laughlin got this shaft out at 6 o'clock the same day, but the next thing to do was to get it delivered to the Schermerville Yards from Harvey, so that the same could be placed and the yards started running the next morning. The Illinois Brick Co. called on the Harvey Motor Truck Works to deliver this shaft for them, which they did with one of their new 1½ ton trucks and promptly delivered the shaft at 1 o'clock in the morning. As a result, the Schermerville Yards of the Illinois Brick Co. were ready to start on time the next morning.

This quick service, it is said, could not have been given by any other means of transportation in this time. Harvey is located fifteen miles south of Chicago and Schermerville is the same distance north of Chicago.

Mr. Wm. E. Dee, proprietor of the Harvey Motor Truck Works, being a clayworker knew how busy these yards were and being present at the Harvey Motor Truck Works at the time, immediately ordered this truck put into commission to do this stunt, and it was done as agreed. This incident shows how handy these trucks are for the busy clay manufacturer who is frequently required to make quick deliveries.

WOMEN REALIZE DESIRABILITY OF BRICK.

Modern Housewife Appreciates Many Features of Advantage in Brick House and Demands That Type of Abode.

An article which appeared in a recent issue of the Cleveland (O.) "Leader" bears the stamp of the progressive publicity work being done by the Cleveland Face Brick Association. The article follows:

"There are very few homes in the country the plans for which were not, in a measure, dictated by a woman. No sane man thinks of building a home or buying one ready made without consulting his wife, if he has one, or his wife-to-be, if that's his condition.

"And this is proper. The woman should have about 90 per cent of the say in the home building, for it will be 90 per cent her domain when it is completed.

"The business man would not want another to tell him how his office or shop should be arranged, and the home is the place where the wife works every day, and all day, and no one knows so well as she how it should be built.

"There is more than the arrangement of rooms to be considered by the woman. She wants things handy, of course, and that no husband will deny her. If after the interior is all worked out to her satisfaction and the decorations and furnishings have been selected the woman asks that all this result of their planning be enclosed in a fireproof wall, suiting the interior in dignity and character, the man usually will protest and say, 'Oh, I guess wood will be good enough for us.'

"Way back somewhere, sometime, he heard that brick was more expensive than wood. He doesn't remember when he heard about it or who told him, but he accepts it as a fact and argues for wood.

"But while he has been at the office with his mind occupied with other things the wife has been investigating the question of brick as well as gathering information that affected the interior of her home. She has learned that it actually is economy to build of brick in place of wood. She is convinced that it means a great deal to her personally whether the house is permanent or temporary. She has lived in a frame house and knows the disadvantages. She will demand that her home be built of brick.

"Appearance has much to do with her position and she feels that any other material than brick would not be in harmony with the interior of their home. She does not want the annoyance of repainting every few years and annual repairs that the frame house always must have. She knows what the beauty of age means in a brick home with the colors blending into the landscape and a harmony in effect that can be obtained with no other material than face brick.

"She remembers a number of arguments that have taken place about the size of coal bills and the unpleasantness that sometimes resulted from a chilly house when it seemed impossible to keep 'Jack Frost' out.

CURE FOR "BALD FACE" BRICK.

The superintendent of a Texas dry press brick plant wrote us, asking information as follows:

"Our company has had considerable trouble with 'pinked' or 'bald face' brick, which we have been trying to correct in various ways, with but poor success.

"Our brick are made by the dry press process of a very good grade of fire clay. We water-smoke them about 14 to 16 days, using wood as a fuel, and burn them from 4½ to 5 days with oil, in large up-draft kilns. We set the brick 39 courses high and 32 brick wide, each arch being 4 2-3 brick wide, or about 19,500 brick to each arch in the kiln.

"At present, we are having the most trouble with our gray manganese brick, sometimes having as many as ten per cent 'bald face' and invariably find them in a V-shaped body through the center of the kiln from one end to the other. We raise the heat to 980 degrees in the arches in about three days from the time that we start to burn them and then apply the setting heat gradually until the heads begin to settle, all the while forcing the fire to the center of the kiln. At this period our troubles start, as it seems we cannot hold the heat back long enough to give the chemical water (or water and combinations) time to escape, with the result that 'bald face' brick are much in evidence."

A practical brickworks engineer answers the question as follows:

We cannot determine from the meager information given just what the Texan's trouble is. We have been through all kinds of troubles with manganese brick and the general terms applied to the troubles are familiar, but we have never heard the term "pinked" or "bald faced" applied to any of the troubles.

Nearly every yard or locality gets in the habit of describing some peculiarity in the appearance of the burned brick by a local name which has no meaning to an outsider. We should see samples of the "sick" brick and also samples of the good brick, besides sketches showing how the brick are set. If he uses the Texas method of setting face brick in updraft kilns there should be no trouble in getting the brick properly burned or water-smoked in the center of the kiln unless the kiln is too wide. We would have to have more data before we could give a definite opinion as to the cause of the trouble.

If any of our readers have had similar experiences with dry press brick and have solved the problem satisfactorily, we will be glad to have them write us, stating the methods used to overcome the trouble.

The question has also been answered by another kiln expert as follows:

I think a little more time should be taken in burning. From the appearance of the brick I should judge that the kiln is fired too rapidly. When the brick are burned properly they should absorb the heat evenly and uniformly, but this brick would indicate rapid firing—the outside of the brick having been burned before the center had absorbed the required amount of heat.

The margin, around the face of the brick, shows that the manganese is melted. Upon examining the center of the face of the brick, and after breaking it in two and examining the manganese, I find that the manganese has not yet melted. I would advise that you take about 24 hours longer in burning. This will give the heat time to penetrate the brick and you will secure a better grade of brick. It will not require any more fuel—only more time.

Referring to the statement in your letter that you cannot hold the heat, we suggest that you put an extra course of plating on top of the kiln, or that you cover the kiln with dirt. This will keep the heat in.

SULPHUR FOUND IN COAL AND OIL.

Objection to Burning with Crude Oil, Based on its Sulphur Contents, Not Well Founded.

Considering the objections that have been raised against the use of crude oil, on account of its containing sulphur, it may be said that many excellent steam coals carry from 1.5 to 2 per cent of sulphur and that the average life of a boiler does not seem to be impaired by their use. The amount of sulphur in oil used by Prof. Denton, in his experiments, was 1.63 per cent. Allowing that a coal containing 1.7 per cent, an oil would have to contain 2.6 per cent in order to put as much sulphur in the products of combustion as the coal, equal horse power being assumed. It has been ascertained that the use of coal carrying more than 3 per cent of sulphur does not cause any greater depreciation of fire boxes than a coal of 1.7 per cent. Sulphur equivalent in oil corresponding to 3 per cent in coal is above 6 per cent. The objection to the use of crude oil based on its sulphur contents does not appear to be well founded, in so far, at least, as concerns the integrity of fire boxes. Probably sulphur products are only seriously harmful when cooled to moisture point. There is one thing greatly in favor of oil, the sulphur passes off at once. In coal, a per cent remains in the clinker and ashes and at times is very detrimental to different glazes.

Amount of Fuel for Continuous Kiln.

When the fire in a continuous kiln advances only 18 ft. daily and the amount of fuel does not exceed 660 lb. per 1,000 bricks, then the kiln has been fired all right. When the fire goes ahead quicker, and makes from 30 to 36 ft. per day, then the fuel used should not amount to more than 440 lb. per 1,000 bricks. Mr. Ulrich states that his firm allows him 250 lb. of coal for every 1,000 bricks. When he does not go over this amount, the firm pays him ten cents extra for every 1,000 bricks, which amounts to a good premium when it is taken into consideration that the yearly production is between three and a half and four million bricks.—Tonind.

Burning Brick with Peat.

We note, by a foreign exchange that peat is used in continuous kilns, in many places, instead of coal and that no changes in the kiln are necessary in order to change from one fuel to the other, the only difference being in the setting methods.

The subject of scientific management has been much discussed, the past few years, in engineering and manufacturing circles and many articles have been written from various standpoints, pointing out the benefits attending such superintendence. There has arisen a great disparity of opinion as to just what is meant by the term. The following definition seems to sum the matter up in a few words:

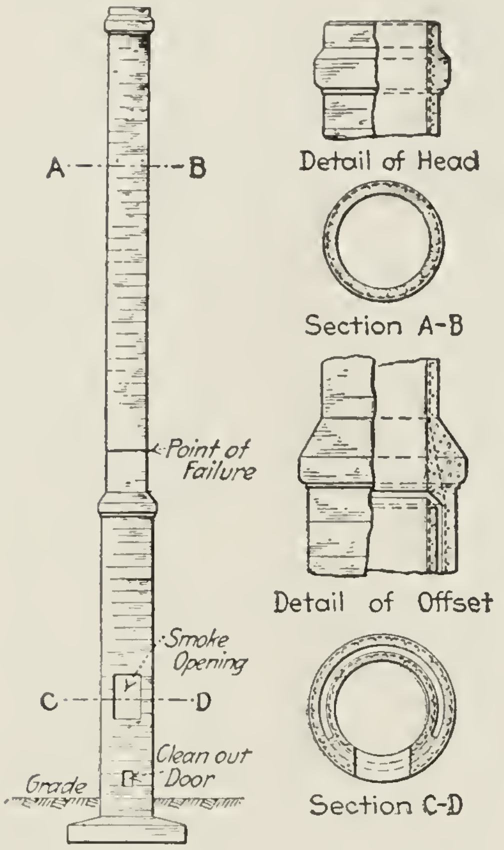
"Scientific Management is the rational application of determined facts to the direction of men or affairs."

WIND WRECKS CONCRETE CHIMNEY.

Poor Concrete and Poor Construction Given as Causes of Failure.

A cyclone wind storm wrecked the 175-ft. reinforced-concrete chimney of the Pennsylvania Cement Co., Bath, Pa., June 2, and caused the death of three men.

The chimney was 8 ft. outside diameter from the lower double-shelf section to the top. The point of failure was 65 ft. from the base and the chimney was apparently sheared off at that height by the excessive wind pressure. The illustration shows the general design of the chimney and the point of failure.



Showing Details of Concrete Chimney Construction and Point of Failure.

From the appearance of the remaining portion of the stack and the fallen parts, the upper section, approximately over 100 tons, after breaking away, was blown sideways a distance of 30 ft. before it landed on the roof of the concrete boiler house, the striking point being indicated by a semi-circular hole in the roof, showing that the fractured stack struck the roof an end blow, when the stack crumbled into small pieces. The concrete appeared to be porous and weak.

This chimney was built by a chimney construction company, now out of existence, and was finished in May, 1907. According to officials of the concrete company, there was trouble from the start regarding the methods of construction. Two rings of the stack above a height of 125 ft. were built during freezing weather. The work was stopped until spring and then, instead of removing the frozen rings, the remainder of the stack was built upon them. Because of this, or some other cause, the chimney was out of plumb 6 inches, within 30 days after its completion.

NEW TYPE OF OIL BURNER.

Device for Forcing Flame to All Parts of the Kiln.

Since oil burning has become so prevalent among brick manufacturers, throughout the country, much thought and effort have been expended in perfecting burning equipment for this fuel. We are informed that the Schurs Oil Burner Co., Los Angeles, Cal., is getting out a new type of burner for common up-draft kilns, the object being to produce a burner that will give a strongly vitrifying flame that will force the gas to every part of the kiln, thus avoiding trouble with burning the heads.

The Schurs Company, we are told, has had an exceedingly prosperous season and their factory is rushed to the limit of capacity in the effort to fill all orders on time. According to the statement of an official of the company, their business in British Columbia, on the Pacific Coast and in Old Mexico has increased over 50 per cent during the past nine months.

SHORTEST CONTINUOUS KILN.

Englishman Discusses Length of Continuous Kiln—Thinks 200 Feet the Limit.

The question, "What is the shortest possible length for a continuous kiln, each chamber of which is to contain 10,000 brick?" was asked in a British clay journal. It was answered as follows:

"It is never desirable to have less than a total length of fire-travel of 200 feet. This corresponds to 14 chambers each 14 feet long (in the direction the fire moves), but the actual number of chambers is unimportant so long as the total length of fire is correct, for it is the latter and not the former which is important.

"The reason the kiln must have a certain number of chambers, or more correctly a certain 'length' is that to effectively use up the heat produced by the burning fuel it must be passed through such a length of brick that on leaving the kiln by the main flue the temperature of the gases shall not exceed 500 C. and may even be less than this if a fan is used. To effect this it is usually found that about 90 feet is the least length of goods which is satisfactory, and whenever possible a greater length should be used. That is to say, from the hottest goods, which are just being finished, to those which the hot gases are just leaving to pass directly into the main flue should be at least 90 feet.

"This portion of the kiln having been limited to a minimum, as just mentioned, the least lengths of the remaining chambers can be equally readily determined. Thus, the number of chambers of cooling brick will depend on the rapidity with which they may be cooled. If a chamber takes five days as a minimum 'safe' time, then the number of chambers of cooling brick will be five, and the corresponding 'length' of this portion of the kiln will be five times the length of each chamber, or say 70 feet in all.

"An additional chamber must usually be emptied and another will be in the care of the setters. Two or more chambers will be 'smoking,' i. e., the goods in them will be heated gradually with hot air or with wicket fires so as to remove all the steam from the brick and to prepare them for heating by the main fire-gases. If each of the chambers has a length of 14 feet this makes an additional 56 feet of kiln 'length' necessary and by adding all the figures given together it will be seen that a total length of 200 feet is not sufficient in most cases. Some firms, with delicate clays to burn, make the chambers much narrower and have a kiln 'length' of double this minimum or even longer."

LEGAL DECISION ON DELIVERY OF BRICK.

Not Entitled to Demand Payment on Delivery of Each Carload of Brick.—A written contract for the sale of 400,000 hard brick, to be shipped from Macon, Ga., to Charleston, S. C., at the price of $7.15 per 1,000, f. o. b. cars at Charleston, the shipments to be made one car each day, beginning February 16th, unless prevented by causes beyond the control of the seller, such as strikes, railroad wrecks and floods, the Supreme Court of Georgia holds, Central Georgia Brick Co. vs. Carolina Portland Cement Co., 71 Southeastern Reporter, 1048, is an entire contract, though the subject-matter is divisible, and, under such a contract, the seller is not entitled to demand payment upon delivery of each carload of brick, but only upon delivery of the whole. Accordingly, where the seller delivered one carload of brick on February 15th, and by reason of floods failed to deliver any more until April, when on the 14th of that month it delivered one car, and on the 19th another, but refused thereafter to deliver any more unless the purchaser would, before delivery, pay a draft for the value of each car attached to a bill of lading, it committed a breach of the contract, which gave the purchaser the right to recover as damages the difference between the contract price and the price which the purchaser was compelled to pay in the market at the place of delivery, in order to obtain brick of the same quality.

THE PAVING BRICK INDUSTRY

MANY BRICK STREETS TO BE BUILT.

Contracts Let by Many Cities Show a Favorable Leaning Toward Brick Paving.

Throughout the country there is an increasing demand for brick pavement, which has been proved by time to be the most lasting and satisfactory. Among the contracts recently let, we note eight streets and alleys at Huntington, W. Va.; several brick alleys to be paved at Louisville, Ky., at a cost of $27,000; 27,195 sq. yds. of vitrified brick pavement at Upper Sandusky, O., to cost $71,000; 1.7 miles of brick road to be laid at Millersburg, O.; .92 mile brick pavement at Angola, Ind.; 14,000 sq. yds. of brick pavement at Wabash, Ind.; 15,000 sq. yds. at Delphi, Ind.; 40,000 sq. yds. at Pikeville, Ky.; .72 mile brick pavement at Zanesville, O.; street to be paved with brick at Dillonvale, O.; 1,161 sq. yds. of brick pavement to be constructed at Elizabeth, N. J.; 65,000 sq. yds. brick paving at Kankakee, Ill.; 60,000 yds. of brick or creosote block paving at Laurel, Miss.

Among the pavements planned, we note that the City Council of Bloomington, Ill., is making plans for paving approximately 14,235 sq. yds. with brick; Davenport, Iowa, will lay brick paving costing $4,200; Clarion, Ia., has plans for paving a considerable number of square yards, but has not as yet decided as to the material to be used.

City Clerk Spaulding, of Lockport, N. Y., has been directed to advertise for proposals for constructing brick pavement on three streets; Bellingham, Wash., will lay brick pavements at a cost of $53,000.

Albion paving brick are to be used for paving Fourth street at Belleville, Ill., and Egyptian block are to be used on Fifth and Sixth streets. The City Council of Moline, Ill., is planning to lay 14,320 sq. yds. of brick pavement. The Village Council of Odell, Ill., has authorized the expenditure of $31,349 for the construction of 13,000 sq. yds. of vitrified brick paving. The Board of Public Works of Racine, Wis., has let contracts for 6,000 sq. yds. of brick pavement to Jas. Cape & Sons on North Chatham street at $1.68 per sq. yd., and on No. Michigan street at $1.65 per sq. yd., and to Birdsall & Griffith on Dodge street at $1.69 per sq. yd. The entire amount of paving to be laid is 6,000 sq. yds.

Paving Brick Toughened By Controlling Heat.

A writer in the "Dealers' Record" has the following to say concerning the manufacture of paving brick:

"In recent years, the introduction of brick paving for streets has led to the manufacture of this class of brick on an extensive scale. Thin paving brick are sometimes used for paving flat roofs of office buildings, department houses, etc.

"The clay used for making these brick is usually shale almost as hard as rock, although it is sometimes found in a semi-plastic condition. With this shale, about 30 per cent of fire clay is generally used.

"The principal difference in the manufacture of paving brick and common building brick is in the burning. In order to stand the frost and wear, paving brick are burned to vitrification. Besides being vitrified, these brick are also toughened by controlling the heat and permitting them to cool under certain conditions. They should have a crushing strength of not less than 8,000 pounds per square inch."

NEWS OF THE PAVING WORLD.

The new specifications of the Department of Public Works of Binghamton, N. Y., for paving with vitrified block, provide that the sub-grade shall be rolled with a roller weighing not less than 10 tons, and that the roller must pass over every portion of the sub-grade not less than 10 times. Special pains must also be taken to thoroughly consolidate the back filling of trenches recently made. If the roller sinks into the earth or causes waves to such extent as to prevent thorough consolidation the contractor must excavate to such additional depth as may be necessary, and spread dry sand, furnace cinders or other suitable material on the street to a depth that will allow the rolling of the sub-grade to a hard and unyielding surface.

Brick Pavement Needs No Repairs.

There has been laid at Helena, Montana, 18,500 square yards of brick pavement. This pavement is reported by Charles W. Helmick, city engineer, as still in good condition, although it has been subjected to heavy hauling on Main street with teams shod with never-slip shoes. There is little likelihood that the guarantor will have to make any repairs. None of these brick pavements has had repairs other than at the places torn up by the public service corporations.

Do Not Like Cement Road.

Smithtown, N. Y., officials are not satisfied with the experimental piece of cement road built by the State in their town. In an official communication to the supervisors they called attention to the faulty construction and the supervisors in turn have instructed their committee on repairs and supplies to look into the matter at once. The Smithtown officials adopted a resolution to the effect that the so-called cement construction did not meet with their approval and that steps should be taken to prevent the similar construction of any more such roads in this country.

The expenditures for good roads throughout the country, this year, are expected to run up to $140,500,000. This expenditure will be not only for the construction of new highways, but for the upkeep and improvement of existing roads. In many cases where automobile traffic is heavy, maintenance is almost as serious a factor as construction. If more brick roads were built the maintenance costs would be reduced amazingly.

Dissatisfied With Concrete Paving.

Residents of Milwaukee, Wis., are up in arms against the concrete paving recently put down there. It is said the concrete is so poor in places that it can be kicked up by the scraping of a shoe, and can be poked full of holes with an umbrella. The property owners feel they should not be forced to pay for that kind of paving.

POTTERY NEWS

GENERAL NEWS OF THE CRAFT.

Important Matters to Be Discussed at Annual Convention. —New Agreement With France.

When the annual convention of the United States Potters' Association convenes in the parlors of the Hotel Raleigh at Washington, D. C., next December—on the same day that the next Congress opens—the membership committee will likely report that a number of firms have dropped their names from the rolls. The Goodwin Pottery Co. and the Walker-Keffer China Co., of East Liverpool, O.—concerns which have gone out of business, will probably be among this number. Inasmuch as there have been few new potteries started during the last year, there is not likely to be any notable increase in the membership.

President John M. Pope, of Trenton, will retire as president of the association at the next meeting, unless the association shall deem it wise to re-elect him for the second term. Following the past rules of the association, the second vice-president succeeds to the presidency, and should this rule be followed, Henry D. Wintringer, president of the Steubenville Pottery Co., of Steubenville, O., will head the organization. William Burgess, who has been the first vice-president of the association for many years, will, of course, be re-elected to that office as usual.

Because of the fact that in 1913 the National Brotherhood of Operative Potters will take up with the domestic pottery manufacturers a new wage agreement, the labor committee of the Potters' Association will without question remain as now made up.

The fact that the United States will terminate its china and pottery trade agreement with France early in September, according to late information from Washington, means that the pottery interests of the United States have won a signal victory. For many years the American manufacturers have maintained that a change should be made in the import agreements—all for the betterment of the American industry. This resulted in the Treasury Department sending a special commission to Europe to probe these methods of export, and the final result has been in favor of the American interests. That a new agreement will be made with France, there is no question, but it is reasonable to believe that such an agreement will be drawn on different lines than the one now existing.

The consolidation of the plants of the Shenango China Co., and the New Castle China Co. at New Castle under the management of President Joseph Smith, of the Shenango company, means that the New Castle company will become the largest producer of vitreous hotel and restaurant pottery in the United States. There are only five potteries in the United States making this class of ware, and the first was made at Greenwoods in Trenton. There are no vitreous china plants in the East Liverpool, O., district, the nearest one to that city being the Warwick China Co., of Wheeling, W. Va.

The Pennsylvania China Co., of Ford City, Pa., which was formerly under the management of Charles Howell Cook, of Trenton, N. J., will, it is reported, soon begin operations at its plant at Kittanning, Pa., which is hard by Ford City. The Kittanning property has been inactive for a number of months, and the business of the company has all been taken care of at the Ford City plant. James Hill, of the Colonial Trust Co., of Pittsburgh, Pa., is president of the Pennsylvania China Co., while his assistant is C. L. Gray, formerly credit man for the Goodwin Pottery Co., at East Liverpool, O.

The McNicol-Smith Pottery Co., at Wellsville, O., has been re-organized, and the name changed to that of the McNicol-Corns Co. In reality the former name was but a partnership between D. E. McNicol, of the D. E. McNicol Pottery Co., of East Liverpool, and Will L. Smith, president of the Taylor, Smith & Taylor Pottery Co., of Chester, W. Va. The new company has procured an Ohio charter, has a capital stock of $60,000 and several new stockholders have been admitted. Mr. Smith, who retires from the company, is a son-in-law of Richard Barlow, of Trenton, N. J.

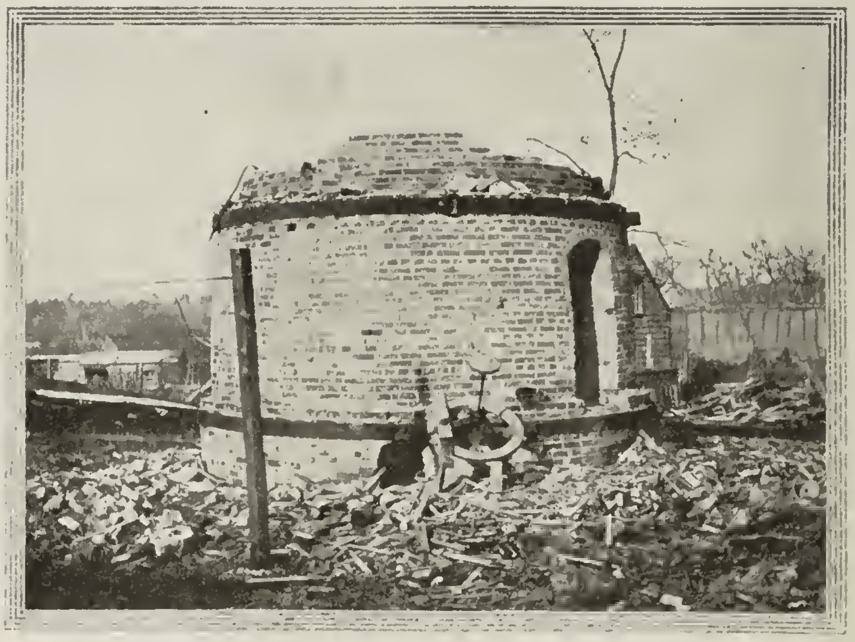
Business with all western potteries is declared to be good, and orders are better than at any time during the year. There are only three idle plants in the district.

EARLY-DAY POTTERY KILN.

Interesting Account of the Rise and Fall of the Pottery Industries at Yarmouth, Me.

The old pottery kiln, shown in the illustration, which has been for many years a landmark at Yarmouth, Me., and which was one of the few remaining relics of the old-time potteries in the state, was recently torn down.

Its effacement brings to mind the other potteries of the town and an industry that was of importance in the community. Something over a century has passed since the first pottery was established, and the years mark many changes in the town and in the times. Tinware was then a luxury and the housewife depended on the potter for milk pans, mixing bowls, jugs and other cooking utensils. The first Yarmouth pottery was the so-called Thomas Pottery, established in 1791 by John Thomas, a native of Gloucester, and was operated by him and his two sons, William and Samuel Thomas, and for many years after by Joel Brooks. Soon after the death of William in '48, the pottery was torn down. One piece of ware from the place is still in existence. It is a large brown pan bearing on the bottom the inscription, "North Yarmouth, Oct. 15, 1836. John Thomas, aged 82."



Primitive Pottery Kiln at Yarmouth, Me.

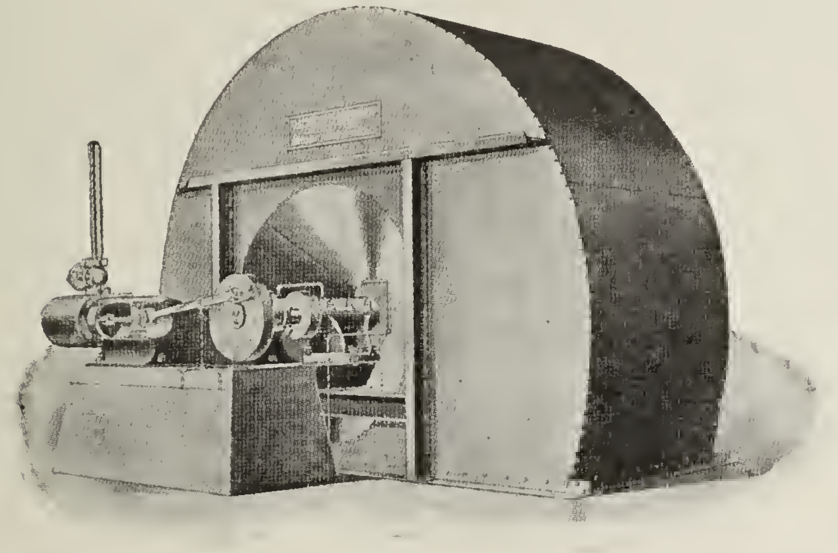
SIROCCO WASTE HEAT FANS.

Improved Apparatus for Utilizing Waste Heat Reduces Fuel Expenses.

The economic benefits to be derived from the utilization of heat obtainable from cooling kilns for drying purposes are so well established and recognized by clayworkers generally, that anything bearing on this general subject would not only be a repetition but somewhat tiresome.

While the economic value of utilizing heat that would otherwise be wasted, is apparent, there are opportunities for improvement in the design and construction of the apparatus and other appurtenances necessary to obtain in actual practice the advantages inherent in the system.

To illustrate: For years it has been the customary practice to use in connection with tunnel dryers, blowers of the centrifugal type, the mechanical efficiency of which seldom exceeded 45 per cent, in spite of the fact that during the past three or four years blowers of much higher efficiencies have been developed and come into practically universal use in other lines of work, such as ventilating railroad tunnels, subways, mines and for other similar purposes.



Sirocco Fan, Driven by Direct Connected Horizontal Engine.

The Sirocco blower, manufactured and controlled in this country by the American Blower Co., Detroit, Mich., and in Canada by the Canadian Sirocco Co. Ltd., of Windsor, Ont., shows a marked departure in principle and design from the type ordinarily used. Its principal distinguishing feature is the wheel or runner, which is here illustrated.

Instead of from 8 to 12 blades of considerable radial depth, this wheel has 64 narrow blades, curved in the direction of rotation. On account of the short blades and a large inlet, as compared with the other types of fans, the resistance to the flow into the fan is reduced, leaving this added energy available for the discharge. It is due to this combination of mechanical refinements, of design and detail, that the Sirocco fan produces such high volumetric, velocity and mechanical efficiency.

The type of blower generally used for waste heat drying work is of the three-quarter housed bottom horizontal discharge type, as shown in the accompanying cut, and is equipped with water-cooled ring oiling bearings.

The above-mentioned company furnishes blowers for either direct-connected steam engines or with pulleys for belt drive. The wheels, as a rule, are over hung on the blower shaft, which is made of extra large size to prevent deflection or vibration due to the weight of the overhung wheel.

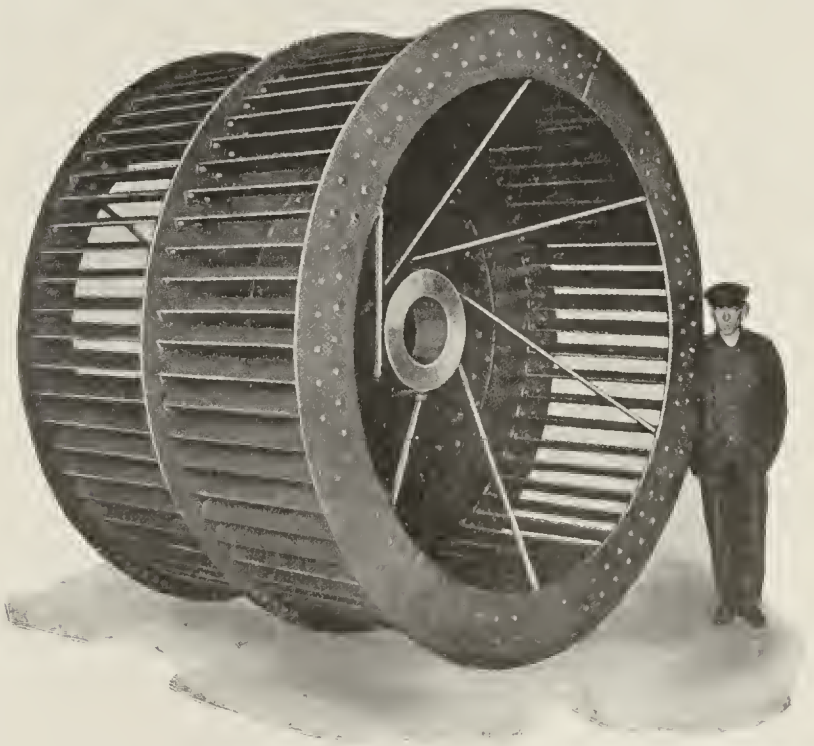
CONSERVATION OF FUEL.

Coal Consumption Expensive Item in Brick Burning; How to Lessen Amount Used.

One of the most difficult problems the modern brick manufacturer must face and solve satisfactorily is that of the conservation of his fuel. The cost of coal is such that no one can afford to use it wastefully. Along with the cost of fuel for brick burning must be figured the expense of grate bars in the old style grate furnaces. Many experiments have been made with only partial success to overcome the use of grates and to lower the coal consumption.

It is well known that a large percentage of the heating properties of fuel passes off as smoke and refuse, representing a total loss. But how can we overcome these losses and expenses and get the full benefit of our coal? The manufacturers of the McManigal grateless furnace claim that their furnace has solved the problem better than any device heretofore produced. The simple and economical style of construction of this furnace seems to have fulfilled all the requirements of a fuel saver. A saving of fuel of from 20 to 40 per cent is the claim of the salesmen. A rather broad statement, but they state that in no instance where it was constructed, according to plans and intelligently used, has the furnace fallen short of the claim.

The idea of the grate is this: The coal is placed on a coking table where it is converted into coke before it is placed in the combustion chamber. The position of the combustion chamber is such that all the gases from the coal must pass through it before reaching the inside of the kiln, all inflammable gases being thus consumed.



The Wheel, a Distinctive Feature of the Sirocco Blower.

After the fuel has reached the state of coke it is pushed into the combustion chamber and consumed, leaving only a small per cent of ash. Thus the smoke and a large part of the refuse taken from the ordinary furnace is converted into heat, or rather into money. The furnace, being grateless, there are no grates to keep up, which, in itself, is a great saving.

The following firms have recently made contracts for the installation of the furnace: The Windsor Brick Co., Akron, O.; The Evens & Howard Fire Brick Co., St. Louis, Mo.; The Wadsworth Brick & Tile Co., Wadsworth, O.; The Bruce Campbell Brick Co., Johnstown, Pa.

NEW TYPE OF CONTINUOUS KILN.

Lessened Fuel Consumption and Uniform Draft Regulations Among Advantages Claimed.

Taking into consideration the present prevailing and well founded interest in continuous kilns and the many articles which have appeared in trade journals on this subject, it may be assumed that the reader is perfectly informed as to the remarkable history of the continuous kiln in its various forms as well as the underlying principles and the advantages derived from its use.

It is well known that high class engineering and adaptation to local conditions have brought the continuous kiln in European countries to a high state of development.

Considering this fact and the existing demand for a continuous kiln, which at a minimum cost of installation and with the least amount of fuel and labor will yield the largest capacity and the highest amount of A-1 ware, the Gas Machinery Co., of Cleveland, Ohio, has designed and placed on the market the kiln, illustrated.

The tunnel kiln type was chosen, as its scope of usefulness is the largest. Its manufacturers claim that it is equally well adapted to burning almost all kinds of clay ware, excepting specialties such as flashed brick, sewer pipe, etc., and that the cost of installation is not more and in some cases less than that of downdraft kilns of the same capacity, and that its fuel consumption is considerably less and its capacity in comparison with the investment higher than that of other types of continuous kilns. The tunnel kilns may be built in capacities of 10 to 75 thousand standard size brick per day.

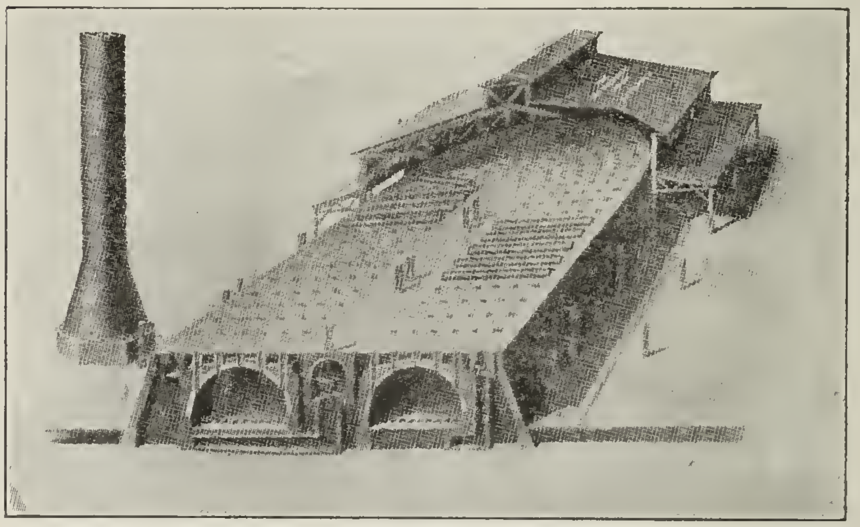
The general design of this kiln is of the usual endless tunnel type. Great care has been given to the structural part, following in design all the most up-to-date practice, in order to insure a long and useful life of the kiln at a minimum expense for repairs and maintenance.

In designing the operating features the valuable experience of the Gas Machinery Co.'s engineers, both here and abroad in designing and operating continuous kilns has stood them in good stead. Their foremost aim was the creating of uniform draft conditions and the providing of adequate and effective water-smoking arrangements, and they have developed a mode of draft control and of water-smoking with hot air both from bottom and top, which insures the most perfect results as to uniformity of ware.

A careful study of the requirements in each individual case must be made in order to determine the proper proportions of flues, valves and stack or fan. The fan being preferable in most all cases as a source of draft.

The Gas Machinery Company will either contract to furnish plans and specifications or to build the kiln from the excavation up and turn the kiln over ready for operation.

The latter method would seem the most satisfactory both to the buyer and the builder, as it assures both parties that the kiln will be built as designed and the quality of workmanship will be such as to insure a maximum life with a minimum repair account.



Showing Construction of a Regenerative Tunnel Kiln.

With this end in view the company has secured the services of a number of highly trained brick layer foremen, superintendents and instructors, and is prepared to furnish designs and complete kilns in the shortest possible time, and to the satisfaction of all concerned.

ECONOMY OF BURNING CRUDE OIL.

Schurs' Booklet Treats Subject Exhaustively, Giving a Comparative Table from U. S. Report.

One of the best arguments for the use of crude oil in the burning of brick and other clay products is found in a booklet just issued by the Schurs Oil Burner Co., of Los Angeles, Calif. This book, entitled, "Economy and Methods of Burning Fuel Oil," treats the subject in the most exhaustive manner.

The opening pages are given over to a comparative table of various fuels showing the United States geological report on the evaporation of oil and coal. Oil, according to this table, with one pound as a basis, will evaporate from fourteen to sixteen pounds of water from and at 210 degrees, while one pound of coal will evaporate only seven to ten pounds.

Other chapters are devoted to the practical end of oil burning and some of the advantages given are: More even coloring and practically no discoloration from soot, smoke or uneven heat; no wasted space for fuel storage, as oil can be placed in tanks under ground, one car load of oil representing three and a half cars of coal; cheaper handling of the fuel, the cost being one-half that of coal; regulation of fires is done more easily, resulting in uniformity of temperature and therefore, uniformity of product; no necessity for losing time or labor in cleaning fires; no waste in ashes or any expense in ash removal or grate renewal; saves one-third time in burning; requires less number of employes, the first three months' labor saving usually paying for the burners and the cost of installation.

IN THE REALM OF PUBLICITY.

"The J-M Roofing Salesman" for July, H. W. Johns-Manville Co.'s house organ, says Cleveland is experiencing the biggest building boom in its history. Records show that 2,246 buildings were in process of construction June 1.

H. W. Gerlock of Huntingdon, Pa., maker of steel drier cars and other brick plant equipment, is sending out a large thermometer to the trade with a neatly printed advertising card thereon.

The Schurs Oil Burner Co., 1007 N. Main street, Los Angeles, Cal., is sending out a new catalog of their products and with it a most interesting booklet describing in detail their oil burner.

NOVA SCOTIA'S PLACE IN BRICKMAKING.

Recently Organized Company Purchases Seven Plants Which Will Be Modernly Equipped.

In this revival of the brick era, Nova Scotia is having a conspicuous place. For years good brick has been made in that province, but at isolated plants and under divided control which lessened efficiency and increased costs of production. This condition is now passing away and seven of the best known brickyards in Nova Scotia have been purchased by the Nova Scotia Clay Works, Limited. The seven plants will be reduced to four or possibly to three, but the capacity and efficiency of the plants to be operated will be greatly increased, those continued having the advantages of proximity to clay and other raw materials, and geographically located so as to command for the output the most economical means of transportation by water and rail to market.

Greater Demand for Brick.

The demand for brick in our modern cities for building purposes and for residential and industrial requirements thoughout the country is yearly becoming greater, a tendency that is noticeable in Nova Scotia, not less than in other parts of Canada and in the United States. The price of wood is higher, making brick more desirable on economical grounds as well as on those of durability. The growth of the demand for brick in Nova Scotia has exceeded the capacity of existing plants and those where the best results can be obtained will be increased to meet all requirements. The modernization and extension of the plants will be conducted so as to give an initial annual output of 25,000,000 brick, of the grades required by all markets within practical reach. This market is very extensive because of the unrivailed water communication and favorable rail connection, and it bids fair to increase year by year.

Company Capitalized at $600,000.

The Nova Scotia Clay Works has its head office at Halifax, with central sales department in that city, and the four chief plants to be operated are at Pugwash, Annapolis, Middleton and Elmsdale. Three other plants purchased by the company are at Shubenacadie, Bridgetown and Avonport. These will all share the advantages of concentration of management and ample capital.

The issued capital of the company is $600,000 in equal amounts of 7 per cent preferred stock and common shares.

F. B. McCurdy & Co. are making a public offering of $150,000 of the preferred stock at par, with 40 per cent bonus of the common. The balance issued has been taken by the underwriters.

Big Profits Possible.

The estimated profit on an output of 25,000,000, a quantity which can without difficulty be manufactured and marketed annually, is estimated at $50,000. This would leave a surplus, after payment of the preferred dividend, of at least 9 per cent available for depreciation and dividends on the common stock.

R. L. Macdonald, who has long been associated with the Pugwash plant, is the managing director of the company, of which John R. Macleod is president, and the board consists of a group of successful and well-known business men of Halifax.

BRICK VENEER HOUSES.

The following article by P. K. Rumsey won the first prize in a contest in the "National Builder."

"There are several reasons why we should build veneer houses. The first one is, I think that they are the most economical houses to build and while we find the first cost to build a little more than a wood house throughout, we find in a few years that we have more than saved the difference in paint bills, and at the same time the repairs are reduced. The veneer house can be built to suit any climate if properly constructed. In the first place we should have a good stone foundation not less than 18 inches thick to accommodate frame wall and the 4-inch brick wall. There should also be a one-inch air space left between the two walls. This will allow the brick work to be built plumb and true, and also acts as a dead air space, which no dampness is likely to pass. I would recommend all framing to be seasoned and walls to be built plumb and true, and storm sided with ⅞ T. & G. or shiplap stock, and walls to be covered with a good grade of builders' paper.

"All brick work in veneered walls should be laid in good strong mortar, well tempered with Portland cement. There should also be galvanized iron wall tile used on about every six courses of brick, well nailed to sheathing. We should provide stone sills for all doors and windows and I think we will get a nicer job if we use cut stone lintels, as they will provide a more artistic effect than angle irons or arches. Another reason why we should build veneer houses is that it affords greater protection from fire if we use metal roofs and decreases insurance rates so far as the exterior is concerned. I find in my experience that a veneer house affords greater comfort than most any other kind of construction, being cooler in summer and warmer in winter.

"The most important thing about house construction is the heating and ventilation. All windows should be of the proper size and placed where they will give the best ventilation. I think the hot water system is the best heating system for residences, if properly installed. All chimneys and flues should have terra cotta flue linings, built in them, and should extend to the top of flue.

MAN CORRECTS NATURE'S SHORTCOMINGS.

Sun Dries Brick But it Does Not Always Shine, Hence the Artificial Drier.

Nature is generous but she will not devote all her attention to the brickmaker. She lets the sun shine and sunshine dries brick in a way, but Nature is irregular with her gifts because there are other conditions that require clouds and rains. The modern demand for brick is greater than Nature has provided for, so man must resort to artificial methods. Hence the drier.

Man has made many driers and they differ as much in the methods employed. In all, however, economy is one of the main points watched and striven for by the manufacturer. "The Standard," made by the Standard Dry Kiln Co., of Indianapolis, Ind., is offered to the trade with a claim of this nature. In addition to being a perfect drier and a practical drier, it does its work with the least possible cost as to fuel, labor and time. "The Standard" has no expensive machinery, no complicated adjustments, and is designed with an idea of showing the utmost simplicity

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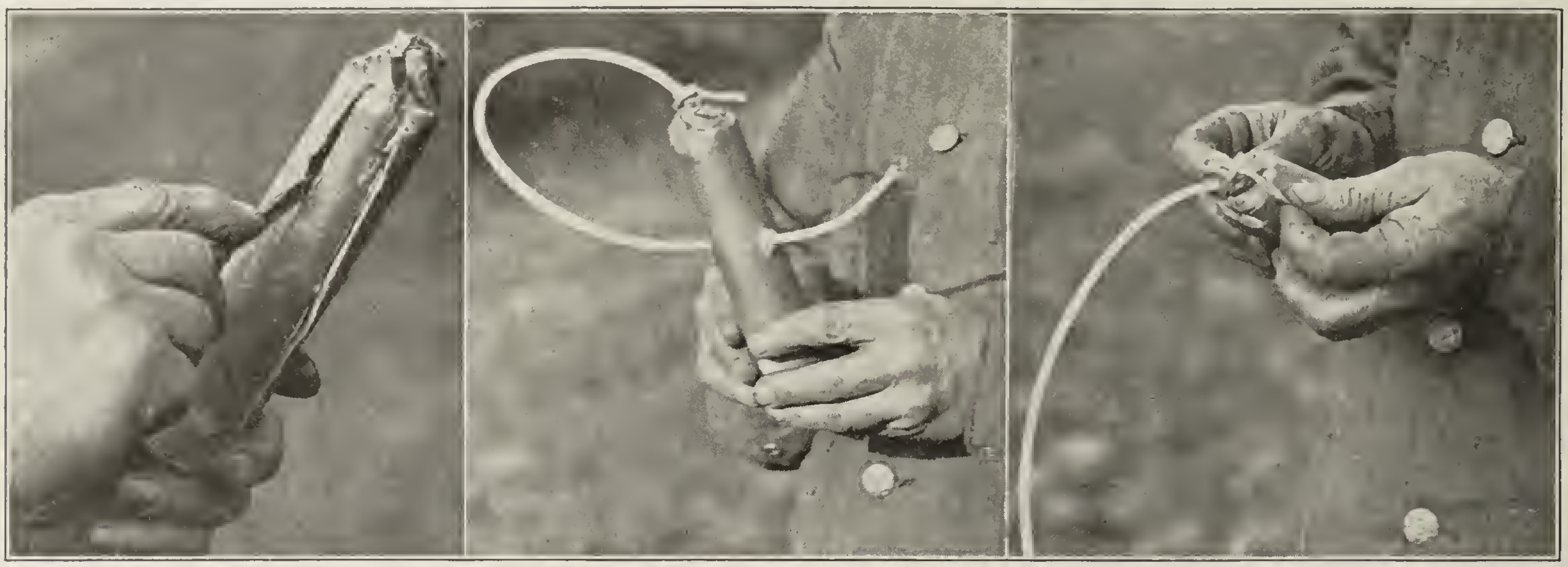
Patrick McLaughlin, who was plastering up the side of the kiln of the Duffney Brick Co., of Mechanicsville, N. Y., was overcome by the gas, fell in the kiln and was roasted to death. Instead of walking around to the other side of the kiln, he tried to walk across the top.

NEW EXPLOSIVE STANDS SEVERE TESTS

Proves Safe Under "Ordinary" Conditions But Powerful When Force Is Desired in Blasting Shale in the Pit



In the top row of pictures the one at the left shows a view of splicing a Dynalite cartridge preparatory to putting into a hole. The water grade Dynalite does not have to be protected from the water.

The next picture, to the right, shows the lacing of the fuse through the cartridge, which should not be done, as the burning fuse is likely to ignite and burn up the powder.

The last picture at the top shows the proper method of inserting the cap and fuse into the cartridge, tying in the same where the cartridge is to be shoved into a hole to keep the fuse and cap from pulling out of the cartridge.

The lower picture shows how the amperage and voltage of a blasting battery is tested in order to ascertain its condition for practical use.

CALMLY holding a stick of high explosive in his outstretched hand, F. H. Briggs, of Elyria, Ohio, gave the signal to an attendant twenty feet away, who stood holding to his shoulder a rifle. The attendant took careful aim at the unusual target, pressed the sensitive trigger and fired. There was a sharp report from the rifle, a puff of smoke and a laugh from Mr. Briggs as he held up the shattered stick.

The little knot of spectators which had stood with abated breath and trembling knees, expecting every second to see the mangled remains of the target-holder hurled into space, breathed a sigh of relief.

"It is just as I told you," smilingly assured Mr. Briggs. "It's harmless under ordinary circumstances."

The "ordinary" circumstances caused just a little ripple of merriment.

Picking up another stick of the explosive, Mr. Briggs buried it in a mound of dirt, applied a fuse, lighted it and, as the small cord spluttered and emitted sparks, he ran with all the speed he could to a place of safety several hundred yards away. The others needed no invitation to do likewise, for already everyone of the little party had rushed to a vantage point some distance from the little mound.

The little fuse continued to splutter, getting shorter with each spark. Suddenly there was a puff of smoke, a frightful detonation and clouds of dirt and rock were hurled high into the air.

"There, you see how it works when it ought to go off," called out Mr. Briggs.

These two tests—for such they were, showed the wonderful explosive power of Dynalite under proper conditions and its safety under "ordinary circumstances." The tests were made recently, in the presence of a party, including a representative of "Brick and Clay Record" to show the practical use of Dynalite in the clay pit.

Explosives form a very important part in the obtaining of raw material in the clay-working plant and this is true particularly where the raw material is shale, although it is frequently necessary where the clay is soft.

Where shale is used in making clay products it must be broken up before it is ready for the dry pan or crusher or before it can be taken conveniently from the pit; and whether face-boring or open-pit methods are employed, blasting is required.

It is the custom, too, quite often, where soft clay is used, to shatter down the clay banks with explosives to permit the handling of the material with greater ease, and, at the same time, economically.

The use of high explosives, therefore, is quite general among clay-workers and the responsibility of caring for it and looking after its use confronts most managers and superintendents. Few pick up a stick of dynamite without trepidation, no matter how accustomed they become to its handling, and the frequent accidents from premature and delayed discharges and the careless handling of the explosive show that this fear is not misplaced.

Last winter "Brick and Clay Record" published some very exhaustive and comprehensive articles on the subject of explosives and particularly on the merits of Dynalite. A representative visited the Elyria plant of the American Dynalite Co., and Mr. Briggs, the general manager and inventor made several interesting demonstrations to show the safety features of the new explosive as well as its high explosive power.

Some of the claims made by Mr. Briggs were of such a strong nature that "Brick and Clay Record" wanted further proof. During the past winter and this spring and summer Mr. Briggs has complied with every request made of him and Dynalite has been put to the most trying tests in actual work in the brick and clay product plants. These tests were made under all sorts of conditions and the new explosive met every one of them in the most satisfactory manner.

The tests made last winter and this summer proved beyond a doubt, in the writer's mind, that Dynalite is the equal of, if not the superior of dynamite in shattering power, and not to be compared with it when safety is to be considered.

Aside from the minimum amount of danger attached to the handling of Dynalite there are other features that appeal to the clay-worker. Chief of these is the failure of freezing weather to affect it and of water to interfere with its explosive power. In the case of dynamite one never can tell whether it is in a suitable condition for use. Some grades are wet and require drying and if the weather is cold it requires thawing. The thawing and drying processes are alike fraught with danger.

In the case of Dynalite, however, the explosive does not deteriorate in storage, dampness does not affect it and it never requires thawing even in the most severe weather. These desirable features made it peculiarly well-adapted for clay plants.

The "water grade" Dynalite is especially useful in clay and shale pits. It can be broken up and used in wet places in either the summer or winter with the same effect as under the most favorable conditions. Its strength of detonation is not weakened in the least by freezing weather.

In some of the tests made for the representative of "Brick and Clay Record" the explosive was set off under water in a clay pit, where it had been lying all night with the cartridge end opened and exposed to the action of the water.

While Dynalite is a safe explosive its makers do not claim that it is "foolproof." However, they do claim, and have proved that it is safe with the ordinary proper handling.

In the clay product field Dynalite is new. Its introduction may be dated, in a sense, with the series of articles that were printed in "Brick and Clay Record" last winter. However, it is now being used by many plants and those that were induced to give it a test last winter through the publicity given the explosive in this journal report the most gratifying results. One of these new customers is the Pearl Clay Products Co., of Kushequa, Pa. Under date of January 27 of this year this company wrote:

> We have our trial order of Dynalite at hand and have obtained highly satisfactory results from its use.
>
> There is, however, one question which occurs to the writer's mind upon which he desires further information before he is justified in placing an order for a large amount of your explosive: Namely, "Can you guarantee it against rapid deterioration when in storage?" If so we are in position to secure you a considerable volume of business in this section. We also control six plants of our own in this section. Awaiting your reply, we are,
>
> The Pearl Clay Products Co.,

The following is the company's answer to this letter:

> Your favor of the 27th arrived during the writer's absence. We were very much pleased to note that you have obtained highly satisfactory results from the use of our goods which shows that you are using strong caps and are properly grading your shots. We presume that you are not warming up our goods as this is not necessary. If the Dynalite appears a little hard you will find by cutting the sticks open that the powder is soft and ready for use even in the coldest weather.
>
> In regard to our goods deteriorating or losing their strength would say that we have recently made a demonstration for The Valley Store Co., also The Elk Fire Brick Co., at Daguschahonda, Pa., they having had the Dynalite on hand since last winter about this time. As these people gave us more business you will see they found the goods all right.
>
> You need have no hesitancy in buying our explosive in carload lots as we guarantee the Dynalite not to deteriorate. We note that you also control six plants and it seems as if it would pay you to buy in carload lots to supply your other plants. You would then be in position, if you cared to do so, to sell Dynalite in your section of the country.
>
> Thanking you very kindly for your remarks stating that you had highly satisfactory results, as we wish to have our goods given credit, we remain,

Under date of March 29, The Pearl Clay Products Co. wrote again in part as follows:

> We are certainly obtaining highly satisfactory results from the use of your explosive and we cannot speak too highly in its praise for our use.

These letters from the Pearl Clay Products Co., are characteristic of the correspondence of the Dynalite users.

This letter from a plant that had been having trouble with dynamite. It shows another phase:

> Until about three years ago we had used dynamite for blasting shale, and black powder for the clay. The formation of our bank is composed of about twenty-five feet of blue clay, and underneath the clay we have forty feet of shale. We are never able to produce good results by blasting the clay with dynamite, consequently we used black powder and thought we were getting good results. We also believed we were having good results in blasting shale with dynamite, until Mr. Briggs of the American Dynalite Co., called on us and thoroughly demonstrated that we were wrong in our belief, and that better results could be obtained by the use of Dynalite.
>
> We have used Dynalite for three years, and this is why: First, we produce better results in both shale and clay than we did with dynamite and black powder, and at a reduction in cost. Second, it does not scatter the material as much as dynamite. Third, it never needs thawing in cold weather. Fourth, water has no effect on water-grade dynalite. Fifth, last but not least, we consider it absolutely safe to handle, and have no fear of an accident while using it.
>
> We use the water-grade entirely, as we find it takes less time in charging, as it is not necessary to have the holes perfectly dry. We use a battery for exploding the charge, which as a rule consists of ten or fifteen holes.

In the use of a safer explosive a few simple rules should be followed. The principal difference between using Dynalite and dynamite is that the blaster should see that he does not use less than a 5X cap with fuse or D. S. electric exploder with battery. Water grade Dynalite has been used in the past winter where the temperature showed 40° Fahrenheit below zero without even warming it. This grade of Dynalite also is not affected by the water, as shots frequently are allowed to stand in water over night, the exploder only being protected.

The American Dynalite Co. receives its mail at Amherst, Ohio, and its factory is located one and one-half miles east, where it has a large acreage, about thirty-five buildings and full equipments. It is prepared to turn out ten tons of explosives daily.

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

The Kaaterskill brick factory, located at Kaaterskill, N. Y., once operated by the Montello Brick Works and owned by A. B. Dawson Coleman, Robert Brooke and A. A. Gery, has been taken over by the Tidewater Brick Co., capitalized at $300,000. The new owners propose to devote this plant to the manufacture of vitrified brick.

The Great Falls (Mont.) Leader says building is booming throughout the state and the demand for brick is unprecedented. The brickyard of Oliver St. Germain at Great Falls is taxed to its capacity and a new 30-H. P. brick machine is being installed to meet the demand.

The stockholders of the Grinnell brick and tile factory of Marshalltown, Ia., held a meeting recently to look over the situation and, if possible, effect a reorganization of the company. No definite action in that direction was taken but a committee was appointed to make a careful survey and report a plan for this procedure.

According to the St. Ignace (Mich.) Enterprise, plans are on foot for the reorganization of the Northern Brick & Tile Co., in which a large number of local people are interested and to raise sufficient capital to permit the company to resume operations. Ed. Reavie, of Laurium, is the manager of the company's plant near St. Ignace.

Fire damaged the Jefferson Brick & Tile Co.'s plant at Jefferson, Wis., July 25.

The Wahoo Brick Co., of Wahoo, Neb., has installed an electric brick burner, by means of which all brick will be burned by heat generated by electricity.

The brick plant of J. Apperson, of Willows, Cal., was destroyed by fire July 19. Loss $5,000.

A new kiln shed is being constructed at the brick yards of Frederic Stocker in East Saugus, Mass., to replace the old one which was destroyed by fire last fall.

Lima, O., experts have pronounced the new concrete tanks of the city reservoir faulty.

The North Indiana Brick Co., of Michigan City, Ind., which has had a force of men at work for some time installing new machinery and making other improvements in its plant at the intersection of West Fourth street and the railroad tracks, is making sand lime brick now.

The Coleman Vitrified Brick Co., of Coleman, Tex., has made a trial test of its new brick machinery and finds everything working satisfactorily. The capacity is 100,000.

Fire destroyed the Brown & Steffler Brick & Mining Co.'s plant at Darlington, Pa., July 22. Loss $15,000.

Valuable fire clay deposits have been found on the farm of Miss Caroline Skinnis near Thorsby, in Chilton County, Ala.

Proposed advances in rates on building brick over the Buffalo, Rochester & Pittsburg Railroad from Orchard Park and Jewettville, N. Y., to Canadian points have been suspended by the Interstate Commerce Commission until Feb. 18 next. Advances were to have become effective Aug. 18.

NEW PLANTS AND ADDITIONS.

The Tidewater Paving Brick Co., of Catskill, N. Y., has been organized for the manufacture of paving brick, tile and other clay products with a capital of $300,000. W. R. Duncan, W. H. Stayton, A. Dana and J. A. Cranberry are the incorporators.

It is reported that the Lincoln Clay Products Co., of Lincoln, Cal., is to erect a clay plant.

The Union Brick Co. is among the recently organized business concerns of Toronto, Can.

Edward Hely, of Cape Girardeau, Mo., is planning to erect a plant for the manufacture of silica fire brick at Attica, Ind.

The Pine Bluff Brick Co., Pine Bluff, Ark., has incorporated with a capital of $10,000.

The Fond du Lac Pressed Brick Co., of Fond du Lac, Wis., which was incorporated in 1905, is being reorganized and will be known as the Fond du Lac Brick Co., and will have an increased capital stock of $75,000. They will make a stiff mud wire cut brick. New machinery has already been bought.

T. O. Williams, of Petersburg, Va., writes us that he and others are contemplating the erection of a brick plant.

A new factory may be located at Waymansville, Ind., by Arbuckle & Son, of Homer, Ind., who are considering the advisability of locating a tile plant there. They propose to build the factory on the farm of James Hinsley northeast of Waymansville, at a cost of $30,000.

Winslow & Co. is organized at Portland, Me., to deal in all kinds of stoneware, fire brick, pottery, tile, clay goods and earthen products with a $300,000 capital.

The Whippany Brick Co., of Whippany, N. J., has incorporated, Thomas G. Jenkins, of 63 Park Row, New York City; George H. Knapp, of 237 East State street, Trenton, and John M. McClintock, of 63 Park Row, are the incorporators. The authorized caiptal stock is $100,000.

The Corona Citrus & Clay Co. at Los Angeles Cal., has been incorporated. The directors are C. A. Mash, R. H. Brown, D. J. Daze, E. Brown and others. The capital stock is $200,000.

A new brick manufacturing firm has been formed in Cumminsville, Ohio. Interested parties are O. W. Roll, Madeira, Ohio, superintendent and manager; James G. Fisk, Herbert J. Dorger and Edward B. Harris, of Cumminsville. The yards are to be established in Madeira and the company's office will be in Cumminsville. The new firm started with sales of 300,000 common brick for their first week's business.

The Northampton Brick Co., of Northampton, Mass., has been incorporated to make brick, with William A. Bailey as president.

The King MacDonnell Brick Co., of Middletown, Conn., has changed its corporate name to the MacDonnell Brick Co.

The Ayer-McCarel-Reagan Clay Co., of Carbon, Ind., is making some extensive improvements. Several new kilns are to be installed in the near future.

Brick & Supplies, Ltd., is a new company which will soon erect the largest plant in Canada, to be erected at Calgary, Alberta, with J. H. Evans as president and manager. The machinery has been shipped from Spokane, Wash.

The Marshalltown Sewer Pipe & Tile Co., of Marshalltown, Ia., has purchased a large tract of land and is contemplating enlarging its plant.

The Fire Brick Co., of Ridgway, Pa., recently organized, will break ground next month for its new plant.

Day and night shifts are being employed by the Acme Roofing Tile Co. in an attempt to complete the concern's new plant on the interurban line in North Des Moines, Ia., before December 1. An electric light system is being installed to facilitate night work at the plant. It is estimated that the grading work will be completed before September 1, and the construction work will start at that time.

K. G. Comfort, of Westville, Okla., says he has a clay which has tested well for stiff mud, soft mud and dry press brick and, planing to start a new brick plant wants to know which of these methods is the best and most economical.

Otis L. Jones, formerly superintendent of the American Refractories Co., at Joliet, Ill., has recently organized and was made manager of the Illinois Clay Products Co., which is completing a large fire clay, grinding and shipping plant at Oglesby, Ill.

The Sharon Clay Products Co. began to operate its new plants at Rose Crossing, O., August 1. The company has orders for more than 300,000 brick. The plant will have a capacity of 35,000 brick daily. The plant at Sharon, O., is being remodeled for the purpose of doubling its capacity.

OHIO.

Columbus, O., August 12.—While more or less apathy existed in the brick and sewer pipe business in Ohio during the early months of this year, all of this has vanished, and the manufacturers are enjoying an era of prosperity. Eastern Ohio plants are busy, as are those in the central and southern parts of the state. The fire brick properties in the vicinity of Portsmouth have about all the business that they can handle conveniently and those in the Muskingum Valley or Zanesville territory are unusually busy. In the Northeastern part of the state, and Canton territory, nothing but activity exists.

R. C. Burton, of the T. B. Townsend Brick Co., of Zanesville, in commenting upon the condition of trade declared as follows a few days ago: "We are enjoying an unusual run of prosperity at our plant and will continue to run all season. We had a big stock on hand and it has been exhausted and the men are working every day. We consider Zanesville as good as any city in the country for brick manufacturing purposes. We manufacture paving block, sewer brick, common building brick, face brick, hollow brick and terra cotta brick and try at all times to keep in touch with what the trade demands and then supply it."

At the Zanesville office of the Harris Brick Co., an official of the company remarked: "While business was not so good with us for awhile, it has picked up rapidly of late and we are today doing a bigger business than ever. Orders have come in fast and we have never had as good prospects for a big business as we now have. Our men will be kept employed all winter. We manufacture paving and common building brick and have had a great demand for them.' '

While the Oakland Brick Co., at Zanesville, has not been in operation for a few weeks, large stocks are on hand, and orders are being filled with promptness.

The Ironspot Brick Co., which is manufacturing an excellent building brick, has made quite a reputation for its product. This company recently booked some business calling for delivery in Cincinnati of 3,600,000 first-class pressed brick.

J. C. Bolin, general manager of the South Zanesville Sewer Pipe & Brick Co., reports excellent business for his company. This company is reported to have enough business in sight to keep the works in active operation throughout the season.

George Frink, of Wellsville, O., receiver for the Champion Brick Co., of that city, has been made an offer of $10,350 for the plant, and he has so notified the Common Pleas Court at Lisbon, O., the county seat. The plant was formerly owned and operated by Thomas H. Silver and is said to be valued at between $50,000 and $100,000.

The Kirshner Construction Co. of Cincinnati, has bought the plant of the Fultonham Brick Co., at Fultonham, near Zanesville. The consideration is said to have been $9,000.

The Riggs Clay Products Co., of Sullivan, Ind., has been formed with $20,000 capital stock by Felix Jones, J. R. Riggs and C. L. Davis, of Sullivan.

Construction has been started upon the new brick plant at Summitville (Columbiana county) for the Summit Brick Co., a new corporation. The company has bought 110 acres of fine clay lands at Summitville and a fine grade of paving brick will first be made, and later it is possible that face and building brick will be manufactured.

With a capital stock of $150,000 the Venetian Marble Terra Cotta Co., has been formed at Lima, O., of which Dr. J. P. Poling, of Lima, is secretary-treasurer.

Milton Schaefer, of Canton, is at the head of the new Evansville Clay Products Co., which recently had its name changed officially to that of the Milton Coal & Lime Co. The head offices of the company are at Canton.

M. T. Abbott, general sales manager for the Stevenson Co., of Wellsville, O., manufacturers of brick and sewer pipe machinery, reports an excellent demand for the products of this company. A number of large contracts have recently been booked both in this country and Canada. Their plant is working full time. The demand for the famous Stevenson dry pans continues as heavy as ever.

It is currently believed that the labor differences that exist at the plant of the Crown works of the Robinson Clay Products Co., at Canal Dover, will be amicably ended within a few days. Workmen have asked for an increase of one and one-half cents per hour, which the company cannot at this time see its way clear to agree to.

PACIFIC NORTHWEST.

The Far West Clay Company is having a run of business which indicates an improvement in the building trades. S. G. Ward, architect, has been appointed representative of this company in Seattle, with office at 505 American Bank building.

G. W. Kummer, sales manager of the Denny-Renton Clay & Coal Co., Seattle, Wash., took a trip recently to Vancouver, B. C., where he looked after the business of the firm.

D. T. Farnham, assistant general manager of the Denny-Renton Clay & Coal Co., is spending his summer vacation at Lake Chelan. Mr. Farnham is accompanied by his wife and Mr. and Mrs. L. Dwight Farnham of Seattle.

La Grande, Oregon, brick yards have been purchased by Messrs. P. T. Harbour and G. E. Towery, of Weston, Oregon. Both men are experienced brickmakers, having been in business at Weston, Oregon, for a number of years. The deal was consummated early in July. Mr. Towery will take the management of the yards. The firm expects to burn about two million brick this season.

Work will begin by November on the construction of the new $2,000,000 Davenport Hotel at Spokane, Wash. The proprietor of the "Davenport," said to be America's handsomest restaurant, is building the hotel, which will be fourteen stories high, of steel construction, finished on the exterior with stone for the first two stories, the remainder to be of brick and terra cotta. The general treatment will be polychrome and the general style Florentine. At the eleventh floor will be balconies and columns of terra cotta.

ST. LOUIS, MO.

St. Louis, Mo., August 10.—Business in the local market is progressing very favorably and the volume of trade being handled is well up to the normal. There are a number of big buildings in prospect, and all of them will consume a big volume of material. Building permits for June 1912 show an increase of $144,000 over June 1911. Permits for July 1912 show an increase of $361,599 over July 19.

The stockholders of the Calhoun Clay Products Co., have authorized a bond issue of $75,000 to carry out plans to enlarge their plant, located at Golden Eagle, Ill., so it will be enabled to engage in the plastic brick industry. The company has a capital stock of $160,000. The plant has been in operation several years making pressed brick.

The Board of Public Improvements of this city has awarded street and alley improvement contracts calling for an expenditure of $191,856.

During the past year, 30.83 miles of streets here were reconstructed and 19.82 miles of new pavement were constructed. The construction work cost $704,304 and the reconstruction $491,998. In the new work, vitrified brick covered 8.89 miles, asphalt 1.13 bitulithic 1.85, granite block 1.39, wood block, .13 and Telford 1.80.

In the reconstruction work, vitrified brick covered 3.48 miles, asphalt 2.05, bitulithic 1.67, granite block .06, wood block 2.65.

Alley construction required more than thirteen miles of vitrified brick pavement at a cost of $261,698.

NEW YORK.

New York, August 12.—With only about 60 per cent of the quantity of brick manufactured up to this time, last year, and with labor all the time becoming more scarce the Hudson river brick manufacturers are face to face with the problem of supplying the market at prices which will warrant adequate returns upon the cost of manufacture. There has been talk of a meeting of the Board of Directors of the Greater New York Brick Co., looking toward the establishment of higher prices, but the error of this rumor is shown in the fact that the Board has nothing to do with the price problem.

At the meeting called for August 12th the subject of scarcity of labor and existing market prices probably will be brought up for informal discussion, but no action will be taken at that time. When asked regarding the probability of prices advancing, an officer of the big selling company said:

"Common brick manufacturers, in the North river district, are up against it for labor. Unless conditions in this respect change in the near future, manufacturers will be forced to hold their product at a higher level in order to make a profit. I cannot say when this change in price will take place, probably not within a month, but indications now point to a slight advance before the end of the year."

The report was current in the market, this week, that the plants of the Sayre & Fisher Co., the New Jersey Clay Co., the Fisher Co., and others were shy of bottoms, and deliveries in this city were being delayed. It is a fact that lay-overs of barges are restricted to barely sufficient time to unload, before they are hustled back to the plants for brick that is awaiting delivery there. Yet the Raritan river brick is bringing as high as $6.75 a thousand, and may even go higher unless the demand subsides between now and October.

With Hudson river brick so tight at $7 the Connecticut manufacturers are sitting like vultures on the Bronx boundary line waiting to swoop down upon the market just as soon as the price advances above that figure. In fact, some Connecticut brick is coming into this market now, for consumption in the Bronx and Westchester counties, but the quantity at this writing is small and it is being shipped mostly on accommodation orders to old customers who are pinched for brick.

Briefly, the brick market is extremely stiff. Even on front brick there is a tremendous demand, which, considering business conditions and the uncertain rate of new building projections might almost be said to be epochal. The call for fronts is largely due to the revival of building activity in apartment houses and loft buildings, a type of building which leads all others in the quantity of front brick consumed. Prices range from $28 to $35 a thousand.

Architects Favor "Back to Brick" Movement.

In connection with the subject of brick, it is interesting to note how architects have been welcoming the "Back to Brick" movement since the late Clay Products Show. The following is taken from the 1912 year book of the American Society of Architects: "After inexhaustible research and thorough investigation, including the severest fire and water tests that could be applied to building construction, we do not hesitate to say that brick work far surpasses that of any other form of construction work now known to science. Either structural steel or concrete measures up to commercial tests, as originally known, but where these materials have been subjected to extreme heat and streams of water have been applied to buildings constructed of these materials, under these conditions the results have been disastrous.

"Building brick, in the course of manufacture, is subjected to from 2,800 to 4,000 degrees Fahr., hence all the combustible material has been consumed, and consequently no fire than can be later applied can affect it. . . . Because of the economy of transportation and the facility with which this material can be laid in a building, there is a very noticeable 'Back to Brick' movement in all forms of construction.

"The crushing strength likewise demonstrates the superiority of this material. Hard, well burned brick, such as that manufactured in the Hudson river valley, will stand from 3,000 to 5,000 lb. per sq. in.

Speaking of the economical side of common brick as a building material the article goes on to say:

A further evidence of the indestructibility of brick . . . . is the fact that when a building is demolished, common brick can be readily cleaned and economically delivered and relayed without showing any marked deterioration in the new construction."

Other Departments of Clay Industry.

In the sewer pipe department here in the East, prices are lower. Discounts applying in the eastern list are 87 per cent for all sizes from 3 to 24 inch inclusive: 79 per cent for all sizes from 27 to 30 inches and 77 per cent for sizes running from 33 to 36 inches. Figuring these discounts the net prices in the first classification run from $0.0325 to $0.4225. In the second classification net prices run from $.945 to $1.155 and in the last classification from $1.4375 to $1.61.

The demand is moderate throughout the entire metropolitan district.

In roofing tile practically the same conditions prevail as in sewer pipe. The best grade of promenade roofing tile now brings about $20 per M. for run of kiln and selects run about ten dollars higher. Unglazed vitrified tile of the French or Spanish type runs at about $8.50 per 100 sq. ft. Flue linings, F. O. B. mill are on an 85 per cent discount basis.

The hollow tile market is without change as to demand or prices. Fireproof partition blocks are also unchanged. The mills are working heavily, at from 70 per cent to full capacity, with most of them in the latter class.

There is a tremendous amount of second-hand common brick being used in this city. Robert Main, one of the leading common brick manufacturers in the district, said, in relation to the second-hand brick situation:

"We common brick manufacturers are up against our grandfathers and our great grandfathers as competitors in this age of economic construction. "Look out there," and he pointed to a ten-story building that was being razed, "those trucks are taking that second-hand brick that was made by Hudson river manufacturers long since passed away, to new construction work. That seems to me to be a positive proof of the passage: 'They being dead, still liveth'."

And what Mr. Main said is true throughout the entire district. Second-hand brick is being used for wall linings in place of the light, hard and pale brick that were formerly allowed to go into new buildings by the superintendents of buildings. Now, since they have barred this brick the market for second-hand material has increased by leaps and bounds and largely accounts for the fluctuating demand in the new common brick market so noticeable today.

Brick Case Testimony All In.

Invitations to swear to testimony were sent out last week (Aug. 6) by District Attorney Whitman of New York to all witnesses who had been called to testify before Magistrate Freschi in the matter of D. C. Weeks' et al. against the Greater New York Brick Co. and defendant manufacturers of the Hudson River common brick district, in the matter of ascertaining, by hearings, whether the big eastern selling company had violated the Sherman Anti-Trust law and was therefore subject to criminal action.

From this it is judged that Assistant District Attorney Ellison, who prosecuted the investigation, has submitted all the testimony required in these hearings and that upon Magistrate Freschi's return a decision on this important matter will be handed down.

CANADA.

Owing to the unparalleled prosperity and activity which prevail in business circles, in Western Canada, there is an unusually strong demand for building materials. While there has been no marked scarcity of brick and kindred clay products, the market has been well sustained. The prices for these commodities at Winnipeg are given below:

Brick, kiln run, per M..	$ 13.00	Fireproofing, per M. (brick measure)	$ 18.00
Brick, sewer, per M....	14.00	Flue lining, 8½x8½, per foot	.25
Brick, chimney, per M..	14.00	Hollow brick, per M....	13.00
Brick, veneer, per M...	15.00	Hollow blocks (all sizes) per M. brick measure	18.00
Brick, pressed, per M. ....$25.00 to	50.00	Menominee red sand mold brick, per M....	25.00
Brick, enameled, per M.	100.00		
Drain pipe (farm)......	.05		
Fire brick, per M.......	45.00		
Fire clay, per ton......	20.00		

At Calgary, Alberta, prices are somewhat higher. Many buildings are planned, among which are a $250,000 apartment house and a $300,000 hotel. Prices as quoted are:

Brick, common, No. 1, per M.	$ 22.50	Flue lining, 8x8 in., per foot	$ .24
Brick, common, No. 2, per M.	17.50	Terra cotta tiles, 4x12x12, per 100	8.36
Brick, common, No. 3, per M.	13.00	Terra cotta tiles, 8x8x16, per 100............	18.62
Brick, fire, per M......	65.00	Terra cotta tiles, 8x12x12, per 100	12.16
Fire clay, per ton......	30.00		

Business is active with the Standard Drain Pipe Co., of St. Johns, P. Q., Limited. It has doubled the capacity of its New Glasgow plant this year and has considerably increased the kiln power at St. Johns, Que. The increase of this year's business over last is estimated by the company at between 40 and 50 per cent.

Among the new Toronto incorporations are the Union Brick Co., Ltd., capitalized at $350,000.

Brick layers are getting 67½ cents per hour in the Saskatchewan district.

PENNSYLVANIA.

Pittsburgh, Pa., August 12.—Common brick, face brick, paving brick and sewer pipe manufacturers who have plants or maintain sales offices in the Greater Pittsburgh district are more than pleased with the 1912 condition of business, and especially the orders which are being received calling for immediate delivery.

While the prices of these products could be a little better, so the manufacturers assert, nevertheless here and there manufacturers are receiving more for their products than they did during 1910 and 1911. As one manufacturer explained to "Brick and Clay Record"—"We are letting our old trade have our goods at about the same prices as last year, but with all new business and new customers we are getting a higher price for both our common and face brick."

All clay plants, in the Pittsburgh territory, are working to capacity, and in several instances, enough business is on the books to keep the properties active for from two to three months to come, without any more orders being received. However, the manufacturers are getting new business daily, and this condition is sufficient to warrant the prediction that all Western Pennsylvania and Eastern Ohio clay plants in the above lines will be kept in steady operation until the year's end.

The American Sewer Pipe Co., of Akron, O., has announced the appointment of C. W. Searight, formerly of Philadelphia, as manager of its Pittsburgh offices, which are located in the new Oliver Building. The territory of this office has been extended, as far east as Harrisburg, Pa., thence south through Maryland, Virginia and West Virginia. Mr. Searight has been engaged in the face brick business for nearly 15 years, and as they say in the baseball yard, "he knows the game thoroughly." He succeeds W. Kind, who was in charge of the Pittsburgh offices for several years. The various products of the American Sewer Pipe Co., are now being displayed in the Pittsburgh office, and especial attention is being given to the new vitrified sewer segment salt glaze block. Business with the Pittsburgh office is showing a handsome increase under the management of Mr. Searight, who is rapidly getting acquainted with all the contractors in this district.

While driving an electric motor in the clay mines of the Kittanning Brick & Fire Clay Co.'s plant at Nealton, Pa., Edward J. Lehner was killed by the explosion of two cans of powder.

Damage to the extent of about $1,500 was caused at the Daugherty brick plant at Kittanning a few days ago by an explosion of gas. The explosion was caused by some boys turning gas into the dry kiln. When the gas extended to the flames at the other end of the kiln the explosion followed.

The Darlington (Pa.) Brick & Clay Co. has discontinued its office in the Crozer Building, Chestnut street, Philadelphia, and the territory has been turned over to the well known brick and clay selling agency of O. W. Ketcham & Co., of that city. The Philadelphia offices of the Darlington interests were formerly in charge of C. W. Searight, who resigned to become Pittsburgh manager for the American Sewer Pipe Co.

The Carbon Brick Co., of Carbon, Pa., with general offices in this city announces that it has added to its common brick business and has also added several new face brick lines. The product of this plant has been practically sold for 1912, being distributed through Eastern Ohio and Western Pennsylvania. A considerable amount of business is also being shipped by this company to Cleveland, O., and Detroit, Mich. Large shipments are also being made into the Youngstown, O., territory. The general offices of the company are in the new Oliver Building, Pittsburgh.

William Wallace, manager of agencies for the American Sewer Pipe Co., spent a brief season in the Pittsburgh district during the last month.

With a capital stock of $100,000 the Royalton Shale Brick Co. has been formed by a number of Reading, Pa., business men. The incorporators are Edward R. Coleman, R. Dawson Coleman and L. V. Halberstadt, all of Lebanon, Pa.

Announcement has been made that the United Fire Brick Co., of Uniontown, Pa., just east of here, has transferred its contract to furnish brick for the improvement of the West Alexander-Burnsville road in Washington county, Pa., south of Pittsburgh, to the Pennsylvania Clay Products Co., of this city. The contract calls for the early delivery of over 500,000 pavers.

A bucket brigade put out a fire which threatened for a time the destruction of the J. V. Williams brick plant at Uniontown, Pa. The loss has been placed at about $500.

Terra Cotta interests, represented in Pittsburgh, have just been advised of the formation of the American Tile & Clay Products Co., with a capital stock of $700,000 under the New Jersey laws. The company will make drain tile, roofing tile and terra cotta. Those interested in the company are: D. M. James, Boston, Mass.; Wm. H. Foss, Nutley, N. J.; Peter W. Ditto, 516 Fifth avenue, New York City; Frank L. Ferguson, Singer Building, New York City, and Charles Stegmoyer, 6 Wall street, New York City.

The J. D. Fate Brick Machinery Co., of Plymouth, O., will be the first brick machinery company in the United States to make such a public show of its products as is planned by the company for the annual Pittsburgh Exposition this year. In the Mechanical Hall of this "show" the Fate company will, it is reliably reported, install one of its latest improved brick machines, which will be operated continuously throughout the day. The object of the company is not only to make a demonstration for the benefit of the clay manufacturers who may visit the "Big Point Show," but to also give additional instruction and create an additional interest in brick for general purposes. The Fate company believes that by creating more interest generally in brick and clay products, the business of the clay manufacturers will be increased, thereby indirectly creating new business for the machinery men. It is said that the Pittsburgh exhibit will be in charge of George Anderson, the well known salesman for the Fate company, who is most favorably known throughout the ceramic world.

The Pittsburg Tile Manufacturing Co., of this city, which is erecting a new plant near the Ohio-Pennsylvania state line and the Ohio river, which is within the city limits of East Liverpool, O., is hurrying the completion of the plant with all possible haste. L. O. Lippincott, of Pittsburgh, will be the general manager of the concern, and general offices will be maintained in this city. It is believed that the manufacturing of tile will be begun, on or before September 1.

Fire caused a loss of less than $1,000 to the plant of the Butler Brick & Tile Co.'s plant at Butler, Pa., recently. The fire was caused by some oil in an open barrel igniting from the heat of the rays of the sun.

At a regular meeting of the board of directors of the Harbison-Walker Refractories Co., of this city, the regular quarterly dividend of 1½ per cent on the preferred stock was declared. This was payable July 20.

Operations have been started at the new plant of the Sharon Clay Products Co., at Rose's Crossing, near Sharon. The head offices are in Sharon. Between 40 and 50 workmen are being employed. The plant is a new one, and its construction has occupied the greater part of four months.

E. O. Mattern, of Phillipsburg, Pa., has been awarded the contract for the installation of the electric lighting system being put in the plant of the General Refractories Co., at Sandy Ridge, Pa. This is a new property, and a general line of refractory ceramic products will be manufactured.

A charter was granted August 12 at Harrisburg, Pa., to the Good Clay & Coal Co., of Clearfield, Pa. Attorneys Murray & O'Laughlin, of Clearfield, have the matter in hand.

Brick machinery salesmen in Pittsburg have received information that Walter Wiley, of Shreveport, La., fiscal agent for the Mansfield Clay Products Co., is preparing to erect a $100,000 plant at Mansfield, La., for the purpose of manufacturing brick.

A charter has been granted the Romig Brick Co., the incorporators being E. L. Webster and Louis J. Bergdoll. Head offices, it is said, will be in Philadelphia.

In addition to making other improvements at its plant, the Osceola Silica & Fire Brick Co., of Osceola Mills, Pa., has completed the installation of a new fire clay mill at its plant.

Additions and improvements to the property, costing upwards of $20,000 are being made to the plant of the Beaver Valley Clay Pot Co., at Rochester, Pa. The company is one of the largest manufacturers of clay pots for glass manufacturers in the United States.

A shortage of workmen is reported at the plant of the Clymer Brick & Fire Clay Co. at Clymer, Pa. Brick makers are said to be in demand especially.

The Tidewater Brick Co., capital stock $300,000, has taken over the Kaaterskill Brick Co.'s plant at Kaaterskill, N. Y.

A number of face brick manufacturers from the Pittsburgh district attended the quarterly meeting of the Ohio State Brick Manufacturers' Association, which was held in the Hollenden Hotel at Cleveland, July 25. Freight rates were under discussion. The next meeting of the association will be held in Toledo, O., in October.

TEXAS.

Austin, Texas, August 10.—The activity in building trades in all of the larger cities of the state kept up remarkably well during the month of July. It is expected that the record for August will be fully up to that of the previous month, and it will not be surprising if the total amount represented in the value of permits issued is considerably larger this month than last.

The aggregate value of the permits issued in July in Dallas, Houston, Fort Worth, San Antonio, El Paso, Austin, Beaumont and Galveston was $1,360,019. In this list of cities Dallas took the lead with $540,548; Houston, $246,255; Fort Worth, $175,840; San Antonio, $170,419; El Paso, $121,315; Austin, $45,825; Beaumont, $30,517; Galveston, $29,825. Besides these eight larger cities many of the other towns of 15,000 to 25,000 population are having a remarkable growth and some of them probably exceeded any town in the above named list in the value of permits issued during the month of June, but no record is kept of these smaller places and their true status in the building development of the state is not publicly known.

It is stated that the demand for all lines of building material is keeping up remarkably well for the summer months, being considerably greater than this time last year. Everything points to an unusually brisk fall in building operations all over Texas. This belief is warranted largely by the splendid crop prospects.

J. E. Kenisel recently finished the installation of his brick and tile factory near Bay City Texas, and now has the plant in regular operation. It has a capacity of 20,000 brick a day and this will be enlarged as the demand for the material justifies. He owns a large bed of clay of good grade adjacent to the plant.

The Medina Valley Irrigation Co., which is constructing a system of irrigation near San Antonio at a cost of more than $6,000,000, is laying out four townsites upon the property and will soon begin the erection of a number of buildings thereon. These buildings will be of brick construction and the company probably will establish one or more brick making plants at different places upon its 60,000-acre tract of land. It is claimed that the clays found in different parts of this land are splendidly suited not only for the manufacture of brick but for other purposes.

The street-paving movement in the different cities and towns of the state gives promise of creating a larger demand for pavers than now exists. It has been suggested by some of the manufacturers of paving brick that much good could be accomplished by a campaign of education with a view of showing the municipal authorities and the public generally the serviceableness and desirability in other respects of brick pavement. Just now the lumber manufacturers are making a very strenuous effort to have wooden blocks used for paving. As a result of this activity on the part of the lumber men inroads are being made in the use of other paving material, particularly brick, in Texas.

Considerable importance is attached to the introduction of sub-irrigation by means of tile in what is known as the shallow water territory of the Midland section of the panhandle of Texas. With the development of an underground water supply there which is raised to the surface by means of pumping plants experiments were made last year in conveying the water through the fields in tile laid beneath the surface. This plan is said to have proved highly satisfactory and it promises to become quite generally adopted not only in that particular section but in other parts of the panhandle and western Texas where water may be obtained for irrigating purposes in a similar manner.

In the vicinity of Plainview, tile is being manufactured and used this year in the laying of sub-irrigation systems. With the growth of this new method of getting water into the soil the demand for tile will largely increase.

Extensive improvements have been added to the fire brick plant of the Star Clay Products Co., Elmendorf, Texas. A Ross-Keller dry press brick machine has been installed, its capacity being 50,000 brick per ten-hour day. Additional buildings have been erected and an aerial tramway built to bring the material from the mines, four miles away. The tramway was built by the Roebling Co., of New York, and supplies 75 tons of material per hour. The company has had an unusual demand for fire brick and many shipments are being made not only in Texas but to several adjoining states.

DELAWARE.

Away back during the Revolutionary War days, there was a considerable development of Delaware clays for commercial use, a number of potteries being opened. Refractory clay for fire brick and similar products was obtained near Newcastle in the early part of the nineteenth century, and brick clays were mined at several places prior to 1850. The production of refractory clays and clays used for pottery has continued to the present time, but the industry is of moderate extent because the deposits are small, and the competition with kaolin from other states is keen. As the state has developed, the increase in population has naturally caused a greater demand for ordinary brick, and the demand for better brick for fronts of buildings has led to the manufacture of pressed brick. In recent years, some drain tile has been produced in the state and as larger areas of marsh lands are reclaimed it is believed that there will be an increasing demand for tile.

CALIFORNIA.

Sacramento, Cal., August 9.—The pottery firm of Gladding, McBean & Co. is rushing to completion many new buildings and will probably increase its working capacity at least a third more before the first of the year. The Lincoln Clay Products Co., another local firm, is increasing its force and doubling its capacity for handling its raw clay material, and promises to become one of the Clay City's most important industries. The latter company has been in the field but a short time, but has made rapid strides in the development line and is today marketing its superior raw materials all over the Pacific Coast. This company is composed of Sacramento men and, according to report, will soon erect a clay plant.

San Francisco, Cal., August 9.—Conditions in the building trades on the Coast remain very active, though the height of the building season is past. From what has already been done this year, the indication is that the total of building operations for the year will greatly exceed last year's record. The building permit valuations for the larger cities of the Coast for July show in most instances a slight falling off from the month preceding, as is to be expected, yet new work is being planned on a large scale, especially in the South where the valuation of the June building permits showed a considerable increase over May. One of the most hopeful signs of the times is the tendency for extended public improvements, notably in water works systems. The need for more adequate public buildings is great here and this season shows many new projects in this direction.

The home industry propaganda is naturally right in line with the clay product industries and it is to be expected that local concerns would be active in this movement, but still it was not until the recent organization of the Brick Builders' Bureau that the brick people, in conjunction with the terra cotta and structural steel interests, and the Masons' and Builders' Association, became fully awake to the need of extended educational work along definite lines. This bureau, which is under the management of Nat Ellery, a former state engineer, is at present compiling a vast array of technical information which will be at the disposal of the trade in presenting arguments in favor of clay products for modern buildings. The scope of the publicity work will be far reaching, and as far as practicable, of a personal nature. Though the aim of the bureau is to encourage the use of clay products, its attitude will not be antagonistic to other interests. In short, it will strive to demonstrate by facts and scientific tests just where brick and other clay products are more suitable for use than other building materials. The headquarters of the bureau are in the Merchants' Exchange Building.

The Pacific Clay Products Publicity Bureau, whose offices are in the Crocker Building, is under the management of Frederick C. Davis. This bureau does not conflict with the other in that Mr. Davis devotes practically his entire time to demonstrating the merits of vitrified sewer pipe. Due to his educational campaigns the use of vitrified sewer pipe is growing steadily throughout the State. The sewer pipe plants this summer are all working full capacity and the industry is on a good sound basis despite the fact that prices are held rather too low for profit. The quality of pipe now being turned out is of a high standard.

The first half of the present year was rather dull in the brick market, but since a few weeks ago great quantities of brick have been on the move. The brick manufacturing plants are working full force and making more products than the market can consume for the time being, yet prices are very firm at $7.50 per M. for common brick. Some firms are hopeful for a raise in the price of common brick, but this does not appear likely. The indications are that the brick business will continue very active for several months at least. The terra cotta market is normally active, with fair prospects for the near future.

C. Hidecker, manager of the Ione Fire Brick Co., and the Vallejo Brick & Tile Co., reports the situation favorable for his lines. The Ione plant is operating full capacity and aside from supplying the present large market demands, is accumlating a surplus for the future, as part of the plant closes during the winter.

Robert Moyle, of the McNear Brick Agency, is at present absent from the city on his vacation.

Mr. Edwards, of the Carquinez Brick & Tile Co., states that his company has just begun to manufacture red face brick and that their first kiln of this product, about 200,000 brick, is now burning and will be out in about a week. The new brick is a fine product and has been most favorably commented on by those who have seen the samples. The company intends to manufacture this line extensively in the future. The Carquinez Co. has sold over 5,000,000 common brick thus far during the season and its plant is operating at the rate of 72,000 brick daily. It has just started deliveries of brick for the Little Sisters of the Poor institution of Oakland, about 100,000 brick to be supplied; and are making deliveries for the Crocker Estate Building at Market and Ecker streets, which building calls for half a million brick.

The Steiger Terra Cotta & Pottery Works states that plenty of terra cotta jobs are being figured, but that just at present they have no specially large deliveries to make. Their volume of business in terra cotta however, is more than normal, and they are satisfied that the situation will continue to improve. Among the jobs they are supplying is the terra cotta for the Crocker Estate Building; $10,000 worth is to be used there. This company is especially busy at its vitrified pipe plant. It has completed deliveries of pipe for the Oakland sewer contract, and is now supplying 6 to 12 inch pipe for the new sewer system of Fortuna, Cal.

The California Pressed Brick Co. at Niles, Cal., has completed another trial run of vitrified brick for paving or sewer work. The result is successful and the future of the product is encouraging. The work is under the supervision of Louis H. Mueller.

The Sacramento Sandstone Brick Co. is planning to start a manufacturing plant at Planada, Cal. Good clay in large quantities is available there.

The San Pedro, Cal., Brick Co. began operations for the season on July 10.

The Livermore Fire Brick Co. at Livermore, Cal., has received an order for 180,000 fire brick from the Southern Pacific Co. Their first kilns of face brick have turned out very satisfactory, the product being of a high standard.

The Standard Brick & Tile Co., at Colton, Cal., has bought six acres of land along the east side of the Southern Pacific railroad, south of Congress St., and plans are about to be made for erecting a suitable plant. $21,000 worth of modern machinery has already been ordered and operations will commence with a capacity of 10,000 brick per day. C. A. Rolfe, of Redlands, is president of the company, and W. H. Borden is superintendent of construction.

ALABAMA.

The total quantity of clay mined in Alabama and sold as such in 1910, according to statistics compiled by C. A. Abele, was 75,082 short tons, as compared with 63,408 short tons in 1909, an increase of 11,674 tons, or 18.41 per cent. The value of the clay mined in 1910 was $38,045, a decrease from 1909 of $2,887, or 7.05 per cent Fire-clay showed an increase of 9,345 tons, or 20.7 per cent in quantity, and a decrease of $2,950, or 8.34 per cent in value. Miscellaneous clay, including brick clay, in 1910, increased in quantity 2,329 tons, or 12.7 per cent; and in value $63, or 1.12 per cent.

Quantity and Value of Clay Produced in 1910.

Kind	Quantity Produced, Tons	Value	Avg. Value Per Ton	Percentage of Total U. S. Value
Fire Clay	54,482	$32,395	$0.594	1.5%
Miscellaneous clay	*20,600	5,650	0.274	2.53%
Total	75,082	$38,045	$0.506	1.04%

Comparison of 1909 and 1910.

Kind.	1909 Quantity Tons.	1909 Value.	1910 Quantity Tons.	1910 Value.	Increase or Decrease Quantity Tons.	Increase or Decrease Value.	Percent (Value.)
Fire clay.	45,137	$35,345	54,482	$32,395	+ 9,345	—$2,950	—8.34%
Miscellaneous clay.	18,271	5,587	*20,600	*5,650	+ 2,329	+ 63	+1.12%
Total	63,408	$40,932	75,082	$38,045	+11,674	—$2,887	—7.05%

*Includes brick clay; one producer.

Total Value of Clay Products.

The total value of the clay products in 1910 was $1,667,559, a decrease from 1909 of $32,568, or 1.9 per cent. The value of the brick and tile and fireproof products was $1,645,313, or 98.66 per cent of the total.

Brick and Tile.

The total number of common brick produced was 135,785 thousand, a decrease from 1909 of 10,395 thousand, or 7.11 per cent. The value was $746,961, a decrease of $52,736, or 6.59 per cent. The value of vitrified brick produced in 1910 was $236,516, a decrease from 1909 of $25,860, or 9.85 per cent. The values of common brick, vitrified brick, fire-brick and fireproofing decreased, while the values of front-brick, drain tile, sewer pipe, silica brick and miscellaneous ware increased.

Active Potteries.

Alabama produces only pottery of the commoner or coarser types, red and yellow earthenware, and even this was not produced in any quantity by the nineteen active firms in 1910, most of which was used for local trade only. There was a considerable decrease in production in 1910, the decrease amounting to $14,093, or 38.78 per cent.

INDIANA.

Indianapolis, Ind., August 8.—Brick men, in Indiana, have been enjoying the best business they have had in many years. Every brick plant is running full time and is behind with its orders. Prices are steady with prospects bright for a sharp advance. Building operations in the state are exceeding all previous records. In Indianapolis, building operations are the most extensive ever known. During the first seven months of the year the volume of operations was nearly $500,000 ahead of the corresponding period of last year, while the first six months of this year showed a material loss as compared with the first half of 1911.

Sewer pipe interests here report that the business this year has been the worst in five years, but they are somewhat elated that the present prices are so strong. There has been a recent advance of about three per cent on list prices and all dealers are being given uniform quotations of 80 per cent off of list. The advance amounts to about $20 on a carload. There have been a lot of sewer contracts let in the state, but they have been mostly small jobs. The outlook for sewer pipe manufacturers and dealers is exceptionally bright, as several cities, including Indianapolis, are taking up the question of sewage disposal plants. In Indianapolis it will cost approximately $750,000 to reconstruct the sewage system to conform to the plans for the proposed plant. An exceptional plant is to be erected at once.

The Indianapolis Builders' Exchange has selected J. H. Zinn, secretary of the organization, to attend a convention of representatives of builders' exchanges to be held in Detroit next month. Mr. Zinn is local representative of the William E. Dee Clay Mfg. Co., Chicago, Ill.

A tract, including fifteen acres of bottom land and ten acres of shale land, has been bought at Heltonville, Ill., by the Medora Brick & Tile Co. of Medora, and a new plant for the manufacture of brick and tile will be established. About one hundred men will be employed. The tract joins the switch yards of the Southern Railway and a switch will be built into the tract.

Mr. and Mrs. Benjamin Walcott have gone to Hyannisport for the remainder of the summer, after visiting relatives at Utica, N. Y., for a short time. Mr. Walcott is president of the Indianapolis Terra Cotta Co.

The Indiana Quarries Co. at Bedford is shipping forty-nine stone columns to Washington, D. C., where they will be used in the construction of the Scottish Rite Cathedral. Each column is thirty-three feet long and will cost, delivered in Washington, $2,000 each. The shipment is the largest ever sent at one time from Bedford.

C. W. Koch, M. Koch and F. J. Piety have organized the Koch-Piety Co. at Bicknell to manufacture brick and tile, and will establish a plant at once. The company has been incorporated with an authorized capitalization of $10,000.

The local office of the Western Brick Co. reports it has been having a fine trade. The company is completing deliveries on extensive contracts for the sixteen-story Merchants' Bank Building and sixteen-story Washington Hotel.

Notice of the dissolution of the Colonial Brick Co., a Pennsylvania corporation, has been filed with the Indiana secretary of state.

WEST VIRGINIA.

Wheeling, W. Va., August 11.—The brick and sewer pipe industry throughout West Virginia is declared by brick salesmen here to be in excellent condition. One new plant has begun operations, during the last few months in this state, and gives promise of being one of the most active in the state. This refers to the Admanantine Clay Products Co., whose plant is at North Mountain, in Berkeley county. This concern is capitalized at $100,000 and is composed of the following: President, Charles G. Cushwa; vice-president, S. L. Dodd; secretary-treasurer, A. D. Darby; engineer, Henry H. Hess; superintendent, D. J. Jenkins who, with Levi M. Porter and John P. Keatfott, compose the other stockholders. The plant is located on the main line of the Baltimore & Ohio Railroad, and has two long switches or sidings for the shipment of the product. Vitrified paving brick is to be the product. The plant has a capacity of about 30,000 brick per day, and is now being actively operated, with excellent prospects ahead for a continuation of large business.

At New Martinsville, just south of here on the Ohio river, the plant of the Magnolia Brick Co., was recently purchased for $5,250 by Charles Beck, who, it is understood, will place the property in active operation.

In the New Cumberland (Hancock county) district, all of the fire brick and sewer plants are working to full capacity, with lots of business on the order file. The scarcity of labor in this district, however, caused the Mack Manufacturing Co. to import a lot of laborers in order that all departments of their properties could be operated to capacity. It is said that all clay manufacturers in the Upper Ohio Valley are having more or less trouble on account of the scarcity of labor this season.

Recent floods caused more or less loss to the plant of the Thornton Fire Brick Co., at Grafton. It is said that these losses will amount to several thousand dollars. Stocks, however, were little harmed by the high water.

NEW JERSEY.

The Independent Brick Co., of Trenton, which recently absorbed the J. Walter Miller Co. and the Independent Brick Selling Co., owners of the plant of the Independent Brick Co., at Bordentown, N. J., and the S. Graham plant at White Hill, N. J., and the plant of the Bordentown Brick Co., at Bordentown, is now running these three factories to their full capacity, producing 200,000 brick per day. Shipments are being made at the rate of 200,000 per day and they report that they have on their books orders for 20,000,000 brick.

This company owns in addition to the factories and dwelling houses, over 2,000 acres of the finest clay lands in the state of New Jersey. Their product consists of building and sewer brick entirely, which are of a superior quality, being specified on all government work in the territory which they cover.

Their plants have an annual capacity of 60,000,000 brick and have lately installed a large side-cut machine for the manufacture of a high grade face brick. They expect within a short time to put on the market a vitrified street paver which will materially reduce the cost of street paving in this vicinity.

The Clay Worker's Library

BOOKS YOU NEED

Every clayworker desires to do his best. To do one's best, a man must bring to the aid of his OWN knowledge and experience, the knowledge and experience of others. The best practice, the best knowledge, the "know-how" of experience are condensed in these volumes. It will pay you to add some of them to your library.

CLAYWORKERS' BOOKS.

Clayworkers' Handbook	2.00
Clays: Their Occurrence, Properties and Uses (Ries)	5.00
Clayworking Industry of the U. S. (Ries)	2.50
Bibliography of Clays and Ceramic Arts	2.00
Economic Geology (Ries)	3.50
How to Analyze Clay	1.00
Seger's Collected Works (Condensed)	3.50
American Ceramic Society's complete translation—2 Vols.	15.00
Transactions American Ceramic Society—Vols. I-VIII. (Write for prices)	....
Drying Brick (Richardson)	.25
Kiln Records (Richardson)	1.00
Scumming and Efflorescence	.50
Henley's Book of Recipes	3.00
Hand Brickmaking (English Edition)	1.00
Brick Drying (English Edition)	1.00
Manufacture of Glazed Bricks	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking (Searle)	5.00

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Notes on Pottery Clays	1.50
The Glazer's Book (E. L. Raes)	1.00
Grand Feu Ceramics	5.00
Architectural Pottery	7.50
Observations on Pottery	.60
Story of the Potter (Binns)	1.00

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Sewage & Sewage Disposal (Robinson)	2.00
Sewers and Drains (Marston)	1.00
Practical Farm Drainage (Elliott)	1.50
Hints on Farm Drainage	.25
Land Drainage Engineering (Elliott)	2.00
Sewer Pipe and How to Make It, by Anton Vogt and Jno. A. Turner	.25
Life of Cement, by Wheat. (Write for prices)	

PRODUCER-GAS.

Producer Gas and Gas Producers (Wyer)	4.00
Gas Engines and Producer Gas Plants	2.50
Chemistry of Gas Manufacture (Royle)	4.50
Power Gas and the Gas Producer (Miller)	1.00

SAND-LIME BRICK.

1905 Report N. A. M. Sand-Lime Products	3.50
1906 Report N. A. M. Sand-Lime Products	1.50

BUILDING CONSTRUCTION.

Brickwork and Masonry (Mitchell)	3.00
Details of Building Construction	1.00
Practical Lessons in Architectural Drawing	2.50
Our New House—How We Plan to Build It	1.50
Principles of Architectural Design	4.50
Building Construction and Superintendence—Part I, Masons' Work	6.00
Practical Brick Laying (Maginnis)	1.50
Gilbreth's Brick Laying System	3.00
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Electricity Simplified (Sloane)	1.00
Electricity (for beginners)	.25
Electrical Circuits	.25
Static Electricity	.25
Electric Lighting	.25
Electric Wiring and Lighting (Knox-Shaad)	1.00
Power Stations and Transmission (G. C. Shaad)	1.00
Practical Lessons in Electricity (Crocker-Cushing-Sager)	1.50

BUSINESS BOOKS.

Business Management, Part I, (J. B. Griffith)	1.50
Business Management, Part II, (Russell-Griffith)	1.50
Commercial Law (J. A. Chamberlain)	3.00
Corporation Accounts and the Voucher System (J. B. Griffith)	1.00
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PAVING AND ROAD ENGINEERING.

City Roads and Pavements (Judson)	2.00
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Treatise on Roads & Pavements (Baker)	5.00
Directions for Laying Brick Pavements—Free.	

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Engineering Laboratory Practice (Smart)	2.50
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Modern Steam Engineering (Hiscox)	3.00
Tulley's Handbook	3.50
Engine-Room Chemistry	1.00
The Compound Engine (Tennant)	1.00
Gas, Gasoline and Oil Engines (Hiscox)	2.50
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Boiler Accessories (W. S. Leland)	1.00
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Machinery Repair & Maintenance (Barber)	3.50
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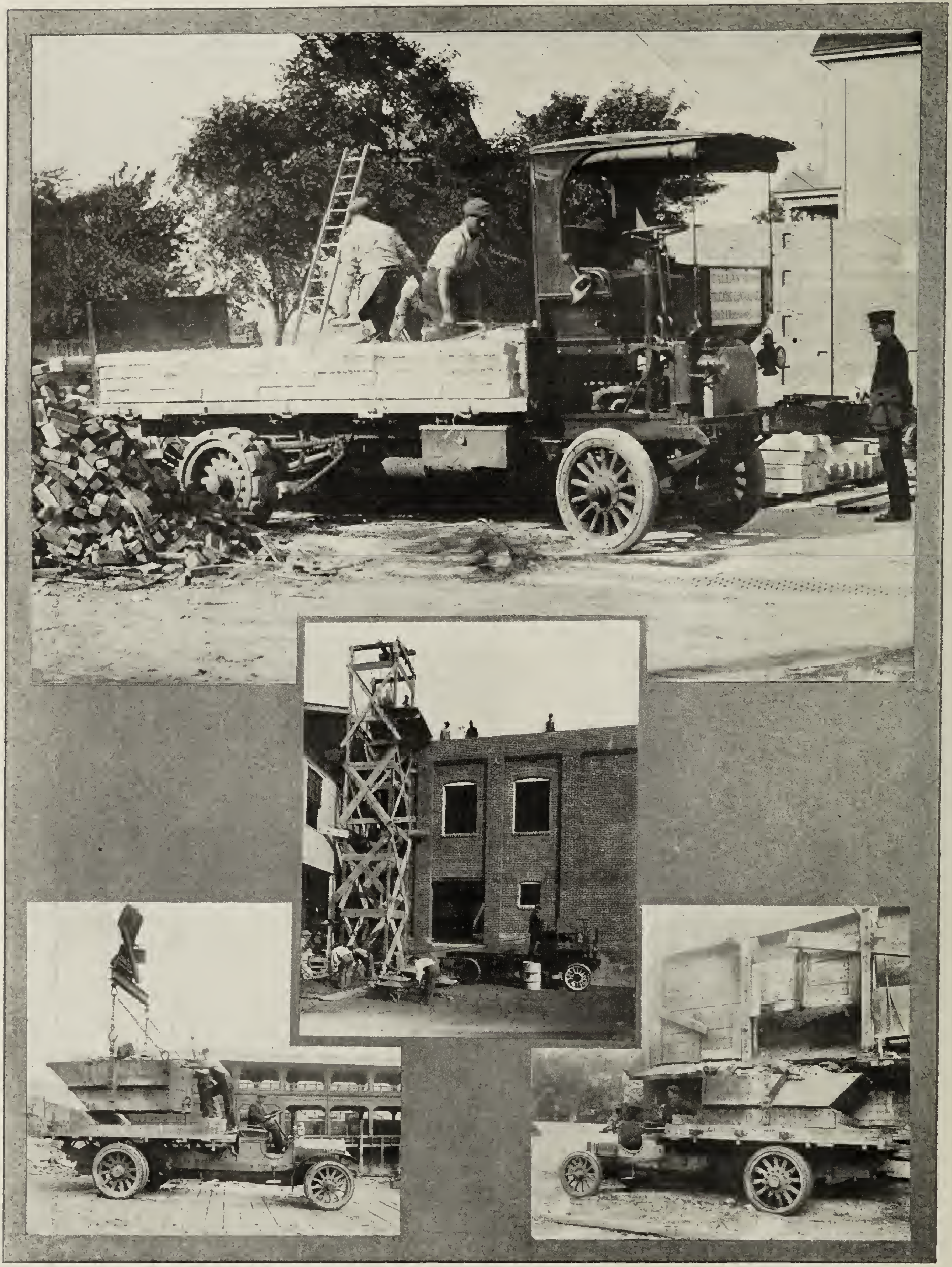
Mechanical Engineering (Sames)	2.00
Machine-Shop Work (F. W. Turner)	1.50

Help your prospective customer decide on the style of house he wants, by showing him the many beautiful designs contained in the Bungalow Book. They will make him appreciate the fact that an attractive and substantial brick home can be built at a reasonable cost. Create an interest in clay products by distributing a few of these books among prospective home builders in your city.

Price, 50 cents, postpaid.

KENFIELD-LEACH CO., 445 Plymouth Court CHICAGO

HOW THE MOTOR TRUCK IS USED BY THE CLAY MAN



These pictures illustrate the articles on the succeeding pages on the use of the motor truck in the clay product industry. The upper picture shows a well-known truck of five-ton capacity used by Callan Bros., New York City, which displaced nine horses and is making a daily average of 45 miles a day in delivering brick to various contracting interests in Greater New York. In the center photograph, the utility of the motor truck is shown, a contractor converting his truck into a hoisting device. This may suggest various ideas to the brick yard man. In the two lower pictures trucks are shown loading and unloading clay at one of the large New York State brick plants.

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BRICK
AND CLAY RECORD

SEPTEMBER 1, 1912

COST QUESTION AND THE MOTOR TRUCK

Expert Gives Real Evidence of Superiority of this Method of Transportation for Clay Product Industries

In no other industry is the motor truck better able to show its superiority as a means of transportation than in the brick and clay product field. In the brick yard, on contract work and wherever a clay product is hauled the motor truck offers better service, more service, cheaper service.

Mr. Hutchinson is a commercial motor vehicle engineer of general reputation and has consented to give "Brick and Clay Record" readers some interesting and positive data on the dollars and cents end of the truck.

By R. W. HUTCHINSON, JR., M. E.

THE necessity for efficiency and economy in all kinds of business is nowhere more pressing than among the brick-making contractors and builders. Modern competition demands the closest attention to details of operation.

Among the problems confronting the brickmaker, the disposal of waste and the haulage of his product is one of the most important. The increase in the cost of maintaining a horse equipment and the necessity for speed, limits the use of horses to a comparatively narrow field, as compared with the mechanical methods of moving material.

The rapid progress of the motor truck industry and the present reliability of service provided by motor-driven vehicles, places at the disposal of the brickman a means of increasing his efficiency and reducing his operating costs. That engineers and builders have given this subject their serious consideration is proven by the increasing number of motor trucks in use by brickmen and contractors throughout the country. The introduction of the motor truck into this field is comparable in importance to the introduction of the steam shovel and air drill.

In the following typical cases the ability of the motor truck to save money and do the work has been well-proved:

Messrs. Callan Bros., of Mott Haven Canal, N. Y., installed a 5-ton Mack truck to haul brick from their plant. It displaced nine horses and is making a daily average of 45 miles in delivering brick to various contracting interests in Greater New York.

The Callan Bros. not only find the truck far more economical, but more dependable, and have, at the same time a far quicker and more satisfactory service. In the illustrations that accompany this article a view is shown of the truck in actual use. It has just delivered a heavy consignment to a contractor and the two men are shown taking off the last layers of the load.

The problem of removing muck and tunnel rock from the Catskill Aqueduct shaft, located in the city of New York, is a serious one. The Pittsburg Contracting Co. is building that part of the tunnel lying between 176th street and 106th street, New York. They are using motor trucks to remove material from the lower shaft to the dumping ground at 129th street and the Hudson river.

After making several tests with motor trucks in this line of work, the company installed two 6½-ton Saurer trucks. The distance from the farthest shaft to the dumping ground is about two miles. With horse-drawn carts it would be necessary to have a large number of teams of small capacity to do this work. Every effort is made to keep the truck in constant motion. To effect this the loading of the truck is done at the shaft mouth from chutes as shown in illustration. The truck carrying a four yard skip bucket is driven under these chutes and the material loaded directly from bins into the skip. The trucks are equipped with special bodies designed to hold these buckets rigid.

It is proposed to attach to each truck a trailer carrying a similar skip so that the total load for each trip will be approximately 13 tons. It is expected that by having the buckets suspended over the chutes leading from the bins they may be loaded while the truck is making a trip and a great deal of time saved in this way. The skips are removed at the dumping ground by a derrick boom equipped with a dumping line. This line is hung from the end of the boom and is attached to a hook riveted at the rear and at the bottom of the bucket. The load is carried out over the dump by means of a hoisting line attached to the bucket, at a point slightly in front of the center of gravity. When the point at which it is desired to dump the load is reached, this hoisting line is slackened and the load is taken on the dumping line which tilts the bucket forward and discharges the load.

Each truck makes an average of 12 trips per day, carrying 42 cubic yards when operating without a trailer. It is estimated that 300 working days in the year is the maximum that a truck may be expected to operate. This allows time for overhauling and holidays.

SPEEDY DELIVERY EFFECTED BY MODERN MOTOR TRUCK

Motor Truck Loaded with Sewer Pipe—Showing Efficiency of This Method of Delivery.

Figuring the cost of hauling this material, where the motor truck is operated without trailer, the cost per cubic yard is approximately 29c. against 80c. where horse equipment is used. The interest in this case is figured on the full investment and no depreciation is charged against the truck. Interest is normally figured on half the investment as an average charge during the entire life of the truck; the depreciation is figured on a mileage basis covering the estimated life of the truck. If the figures were altered to conform to this standard the sum of $432.00 should be added to the total yearly cost. This would bring the daily cost to $13.74, making the cost per cubic yard 33c. From the standpoint of earning power, these figures show that the truck without the trailer hauling 42 yards per day actually earns 47c. per cubic yards or a net profit of $19.47 per day over the horse equipment.

Among contractors the customary amount chargeable to depreciation on all kinds of equipment is said to be 60c. on a three-year contract, making an annual charge of 20 per cent. If this method were used in figuring costs for operation of a motor truck in the same capacity, the amount chargeable to depreciation would be $1,260 per year; $4.20 per day and the total cost per cubic yard increased to 39c. This would still leave a large margin of profit to the credit of the motor truck, against horse-drawn equipment.

Estimating the cost of handling this material by motor truck with trailer when the interest is figured on half the investment and the depreciation is based on the mileage life of the truck, we find the cost per cubic yard to be 33c. By using a trailer in connection with the truck a much greater reduction of cost can be made. The additional investment entailed and the maintenance of the trailer would be more than offset by the increased capacity and the cost per cubic yard would be reduced to approximately 17c. Aside from this earning power of the truck, the ability of these trucks to move large quantities of material rapidly, enables the other work carried on by this company to proceed much more rapidly than it could do if a horse equipment were used.

Another contractor, using one 6½-ton Saurer truck, hauls building brick over seven miles of very hilly country. Some of the grades encountered by this truck are from half a mile to one and a half miles long and vary from 8 to 15 degrees. Nine trips per day over these roads make an average day's work for this truck. It carries on each trip an average load of 10,450 lbs. In this work the truck replaced 12 teams of horses costing $5 per day for each team. One of these teams making approximately two trips per day over this road would carry 8,000 pounds. Twelve teams would, therefore, carry 96,000 pounds for approximately $60. The motor truck carries its 10,450 pounds a trip, or 94,050 pounds per day for approximately $17.

The Empire Engineering Co., working on a contract, requiring the constant haulage of large quantities of building material, installed two 5-ton Mack trucks. These trucks made two trips per day over 18 miles of good road, replacing a horse equipment of ten teams. These trucks loaded only one way hauled approximately 20 tons of building material a day, at a maximum total cost of $40, or $2 a ton. If this work had been done by the ten teams the total cost would have been approximately $50 per day or $2.50 per ton.

The Keystone State Contracting Co., of Yonkers, N. Y., uses a 6½-ton Saurer truck, with hand-dumping body, hauling brick from the yard to building sites. This truck makes local deliveries over good roads, but in a very hilly section where the grades are constant and heavy, it replaces ten teams and the service rendered by this truck enables the company to carry on its building operations more efficiently and economically than when a horse equipment was used.

The opportunities for utilizing the motor truck in contracting work are many and varied. Aside from the increased speed and capacity obtained by using motor trucks the auxiliary devices with which the motor vehicle may be equipped are of great value in general contracting work. These devices have been in use a long time with the horse-drawn carts, and their application to contracting work is well known, but their development as applied to motor-driven equipment is not generally realized.

The dumping body and the winch have been used by contractors as an important part of their equipment for years, but they did not reach their highest development until after the introduction of the motor truck into this field.

The use of the power-driven winch on motor trucks is becoming more common every day. This device is operated by the engine and is connected with the driving shaft and controlled by the truck driver. It is used in many cases with a crane or derrick for loading or unloading trucks. This crane or derrick may often be attached to the truck itself and so arranged that any part of the load may be removed without disturbing the surrounding units. A truck equipped with a power winch may be driven along the side of a building under construction and may hoist its load to the upper stories, saving much time in doing away with the labor and expenses of rehandling the material.

It is possible in many cases to use removable bodies or racks as a means of saving delays due to loading or unloading. These bodies may be loaded and unloaded by means of the winch and may be placed in any position that may seem convenient, if the motor truck is operated in connection with horse trucks the winch may be found to be extremely valuable in assisting the horse trucks over rough places or where foundations are being dug, in pulling them up the steep incline leading out of such excavations.

The power dump truck on which the body of the truck is raised by a shaft geared to the main engine drive is one of the greatest labor and time-saving devices used in connection with motor truck work. It is operated by the driver without leaving his seat and may be stopped and held at any desired angle. This body, however, is available for hauling ordinary building supplies and is particularly desirable where some of the material used is of such character that it slides readily and is not injured by rough handling. In dumping brick the body may be elevated by the driver without leaving his seat, and when the desired elevation is attained the machine may be driven slowly ahead spreading the load over a considerable surface. The full load may be dumped in this manner from a 7-ton truck in 35 seconds from the time of its arrival at the dumping ground, without the necessity of the driver leaving his seat.

EXHIBITORS DISPLAY GREAT INTEREST IN SHOW

Clay Products Exposition
For 1913 Feb. 26 to Mar. 8
FEBRUARY
MARCH
1913
1913
Everything in Clay from Art to Utility.
Open to Public 12 Days. Coliseum, Chicago.

With the date for the allotment of space of exhibitors still twenty days away, Secretary Hopley of the Clay Products Exposition Co. says that his office is flooded with inquiries and the indications now are that the second annual show, Feb. 26 to March 8, will eclipse last season's effort to a far greater degree than had been dreamed of.

The prospectus for the Exposition is now in the hands of the printer and probably will be ready for mailing by the time this issue of "Brick and Clay Record" is in the hands of its readers. This pamphlet is to be a most creditable one from the printer's standpoint, Mr. Hopley assures us, and besides outlining the general policy of the Exposition Company, it announces many new features that have been planned for the improvement of the show.

Widespread interest is being manifested in the Exposition this year and it is expected from letters received that not only the various exhibits shown by American manufacturers will be far more complete but that European clay workers will be represented on a scale that will draw special attention to our brothers across the sea.

"Brick and Clay Record's" regular New York correspondent, whose letter follows this article, writes that the Eastern Clay Commission is stirring up great enthusiasm among the pottery and table ware people and that special efforts will be made to interest European and Asiatic interests. Aside from these foreign exhibits, it is hoped that American plants which specialize in fine tableware and art clay products will exhibit extensively. It is more than probable that the entire gallery in the Coliseum will be turned over to this section of the exhibitors and judging from the activity shown by the various members of the trade it will be filled.

Sept. 20 is the date set for the allotment of space and Secretary Hopley is making preparations to take care of the rush of business on that date. In accordance with the rules of the Exposition Co. the space will be alloted in the order the applications are received.

With the National Good Roads Congress meeting in Chicago at the same time as the Exposition, added interest is given the big show. The paving brick people, who propose to make a still greater display of practical road building, see in this congress a most excellent opportunity to put in clinching arguments for vitrified brick.

There will be hundreds of delegates from all sections of the country in attendance at this Good Roads Congress and it is the plan of the paving brick manufacturers to see that when the delegates go back home they will take with them all the best arguments for the use of vitrified brick in paving.

The architectural end of the exposition will be given more attention, also. Last season a prize was offered for a brick bungalow that would embody all the best ideas in fireproof construction. The price limit was fixed at $3,000, and the building, which was erected in the Coliseum, was given away in a guessing contest. This year it is proposed to set the limit at $3,500, which is expected to bring out designs for a larger and better finished home for the modest homebuilder.

Prizes also are to be offered for the best home for the workingman, the same to be built in the Coliseum, from fireproof materials.

Another feature that is to be added to this year's show will be the prize offered the exhibitors. One prize is to be given for the most novel display; another for the most beautiful display; another for the largest single display, and still another for the most practical display.

The Coliseum has been rented for a period of twenty days instead of ten days as was the case last year. This extra time practically gives exhibitors nine days in which to install and take away their exhibits.

POTTERS PLAN BIG EXHIBIT

Eastern Commission Seeks to Interest European and Asiatic Interests in Second Annual Clay Show at Coliseum, February 26 to March 8

(By a Special Correspondent.)

NEW YORK, Aug. 30.—Preliminary steps are being taken by the Eastern Clay Commission of which John B. Rose, president of the greater New York Brick Co. was chairman last year, to start the ball of enthusiasm rolling for the second annual clay products exposition to be held in Chicago Feb. 26 to March 8. The commission already has communicated with some of the leading pottery interests of Europe and Asia with a view to making the tableware and pottery exhibit international in scope.

"Profiting by our experience of last year," said a member of the commission, "we are getting into the field early so that pottery and tableware interests can arrange their spring exhibits so that they will be able to put their season's wares on exhibition in Chicago this year instead of in other widely scattered cities. In many instances the members of the commission last year found the tableware and pottery interests enthusiastic about the possibilities of a clay products exposition such as ours, but they did not have time, they said, to prepare the kind of an exhibit they wanted to present. In the case of the importing pottery houses many of them require thirteen weeks to get an exhibit over here and set it up. By getting into the field early we hope to induce them not only to come into the show but to take a genuine interest in it.

Tableware to be Given Large Space.

"As for our own pottery and tableware interests, we have in this country a large number of companies specializing in fine tableware and art clay products, both of which have a well-defined place in a clay products exposition. It is planned to reserve the entire gallery for this part of the clay products industry, which will be strongly featured by advertisements in papers throughout the country. East Liverpool will be thoroughly canvassed and from assurances of support already received, it is evident that most of the companies there will actively and generously participate.

"The second show naturally will profit by the experiences gained last year. The eastern clay commission recognizes the advisability of placing possible exhibitors on a competitive basis, and it is possible that the suggestion will be made to the national body to have medals or cash prizes arranged for the largest and the most artistic displays combined with general high quality in various classes of tableware and pottery. Another thing that the Eastern Clay Commission will apply to this year's campaign is the element of scientific publicity in zone papers reaching those parts of the country where actual exhibitors can have some direct benefit in the way of publicity. This plan was carried out in the Hudson and Raritan valley last year during the time the exposition was in progress. Every local paper from the towns or country from which a brickmaker made an exhibit of his wares, received daily an article on the clay show containing some mention of the exhibitor and the attention his display was attracting. This stimulated home interest in his display, gave him the credit for being a progressive in his business and because he had demonstrated to possible customers that he was a live wire in his line, he derived the benefit of a readier market for his wares during all the year.

Urges Need of Publicity.

"This method knocks the last prop of indifference from the show project, because it gives every exhibitor a direct advertising benefit from participating in the show—not in a place hundreds or thousands of miles away from his center of trade, but right where that trade is. All that is needed is a publicity department as efficient as that organized last year by Frank L. Hopley and some local advertising to pave the way to the editorial columns and incidentally to officially stir up interest among local manufacturers to the advisability of entering the show if for nothing more than to display a panel of their products.

"Another feature that must not be overlooked this year is the mantel and tile departments. In these departments the commission counts itself fortunate in having for a hold-over member, Ward B. Edwards, editor and publisher of a leading tile, grate and mantel monthly. This means a powerful ally to the commission. Furthermore, William B. Curtis, publisher of "Paper" has been invited to become a member of the commission and through him it is expected that papers of various kinds and grades will be a part of the exposition as a clay product. An effort will be made to have a working model of a paper plant at the show, showing just how clay is used in the manufacture of certain paper.

"The commission as constituted last year and which probably will be continued this year is as follows: Senator John B. Rose, president of the Greater New York Brick Company and one of the largest common brick manufacturers in the east; J. Parker B. Fiske, originator of "Tapestry" brick, and one of the leading front brick progressives of the country; R. C. Penfield, president of the International Clay Products Exposition Company; M. E. Gregory, a manufacturer of Corning, N. Y.; Ward B. Edwards, Utica, N. Y., editor and publisher of the Tile, Mantel and Grate Monthly; William B. Curtis, publisher of "Paper" Inc., of New York, with President Charles A. Bloomfield of the N. B. M. A.; S. H. Smart of 103 Park avenue, N. Y., and Allen E. Beals, eastern representative of "Brick and the Clay Record" on the advisory board which consists of the entire commission.

Big Cement Pipe Failure.

Tried and found to be unserviceable, a large section of concrete sewer pipe at Boise, Idaho, is being dug up at considerable added expense to the city, and vitrified pipe will be substituted in its stead.

Under a contract from the city over 600 ft. of 24-in. cement pipe was made by the same process as that in use at Colorado Springs. Practically all of it broke and caved in. It is now being dug up and vitrified pipe is being substituted. The taxpayers are much disgusted at the extra expense placed upon them.

DELIVERY IS REAL PROBLEM OF TODAY

Clay-Workers Can Make Brick but Find It Costly to Get them to Market—The Motor Truck and Its Advantages

The delivery of the clay plant's product is the real problem of the day. The clayworker knows what clay to select, how to temper it, how to make it into a commercial product, because he has passed through the experimental stage and he no longer requires instruction along this line. He is confronted with the marketing of his wares and the delivery of the same. Mr. Crain has analyzed the situation well, and offers some excellent suggestions as a solution.

By G. D. CRAIN, JR.

NOW that this is the time for strenuous electioneering, suppose that one of the eminent party speakers should arise to address the brick trade. Carry out the supposition further and imagine the Coliseum in Chicago—that historic spot, thronged with brick and clayworkers from every state and territory in the Union. The speaker of the day arises, clears his throat, adjusts one hand behind his back and the other sheathed in the front of his coat in the most approved style. His brain seethes with anti-trust fermentation and arguments for (or against) Schedule K.

"Gentlemen of the convention," he begins, ponderously, "what—what, I ask you, is the greatest question confronting us today?"

The answer returns like the roar which greeted Casey advancing to the bat. It rumbles in the valley and rattles in the dell.

"Deliveries!"

It is true that the brick trade is puzzled by deliveries more than any other single feature of the business nowadays. There is a constantly-increasing cost of maintenance to be contested, dollar by dollar and cent by cent, in this department of the industry. The delivery problem is one which, if incorrectly solved, will devour profit at a rapid rate, absorbing dividends as rapidly as they accrue.

Manifestly, the subject is one to be handled thoughtfully by every brick manufacturer. The investment represented in a modern plant, when single machines cost thousands of dollars, and dryers, conveyor systems, railways and trackage cost tens of thousands, is so great that the owner must exercise the greatest circumspection in making the enterprise pay. The fact that his raw material is a natural deposit, and that the costs of production are only those involved in handling and burning (features which tend to make the layman believe that the brick industry is one of immense profits upon only reasonable outlay), is over-balanced in the steadily-expanding cost of delivery.

Ninety per cent of the brick men in the United States probably find the key to the dividend-producing power of their plants in a satisfactory system of deliveries. If they can make the selling price cover delivery costs adequately, it is presumed that they are making prices cover other costs of doing business in ship-shape fashion.

It's the Delivery that Causes Worry.

There's a reason for this. Good clay deposits and successful kiln burns do not worry the trade as much as they used to. Very few brick men are troubled by material famines, for yards are rarely established unless in the immediate vicinity of extensive beds of clay and shale which may last for years. Modern machinery and the applied science of the clayworker tend to make things easier in handling the day's cut and the day's burn. Every manufacturer realizes that his waste production of eyebrick and culls is far less than it used to be. It is in handling his output from the yard to the consumer, or contractor, that he buckles against the real difficulties of brick-making.

A brief resume will describe the standing of the trade nowadays so far as the actual execution of deliveries is concerned. There are two classes of equipment available for the manufacturer, horse-drawn and motor-driven.

Horses are yet in the overwhelming majority and autos in a distinct minority with American brick manufacturers. The average plant's equipment may consist of anywhere from a dozen to a score of teams and wagons, and as many hired outfits as the rush of the season may demand. Whether the equipment is owned by the brick company or whether it is rented from a nearby stable, the investment demanded for deliveries is great.

A good team of mules or draught horses will cost at least $350, possibly $400 and oftentimes $500, according to the degree to which the manufacturer is a fancier of live stock. Draught animals cost 100 per cent more nowadays than they did twenty years ago, the increased use of commercial motor cars to the contrary notwithstanding. A wagon costs from $50 to $100, according to the standards maintained in the yard's rolling stock. Some brick wagons are knock-down contrivances in appearance as well as in name. Others are well put together and are nicely finished, but all must be exceptionally durable and with little springiness.

A delivery outfit consisting of fifteen teams and as many wagons, making the average complement, costs anywhere from $7,000 to $9,000. There is this initial investment. Then there is the cost of up-keep of $1.00 per day for teams, including the feed for each pair of animals, the wages of the stable-boss and his helpers, and so forth, not to mention wagon repairs during the year. The driver for each outfit, who is also a brick tosser, receives an average of $1.50 daily wage. Figuring 300 working days in the year, it is evident that a stable of fifteen teams, with drivers, costs at least $11,250 per annum to operate.

In hiring outfits nowadays the brick manufacturer is subjected to expense which would have been termed ridiculous twenty years ago, and which now typifies the high cost of living in the trade. Because of the tremendous demand in every city for draught animals and wagons among the allied building trades, for hauling brick, sand, cement, gravel and lumber, it is nothing unusual for the clayworker to pay $4.00, $5.00 and $6.00 per diem for hired teams. This payment is of the blanket variety, for the stable furnishes its own drivers and, of course, pays for the upkeep of the stock. At that, hiring half a dozen to a dozen teams for six months, or 150 working days out of each year, is an enterprise demanding thousands of dollars additional for the delivery department.

Economy of Motor Truck is Questioned.

The utility of the motor truck in the brick industry may be conclusively demonstrated, so far as sure and rapid service is concerned, but its economy is not definitely proved in the experience of truck users. To begin with, a mammoth end-dump machine must be used. It must possess at least three and, preferably, ten tons' capacity. With each brick weighing five pounds, it is poor business to load only a thousand to the truck, delivering this moderate-sized consignment at just as much cost as though 2,000 brick were aboard. It is probably surer economy for the clayworker to purchase a five-ton capacity car with power for 2,000 brick at a time. Bigger machines are optional with the buyer.

But a five-ton motor truck costs upwards of $5,000 and its depreciation under the strenuous usage of the brick trade is likely to mount well toward 20 per cent per annum or above. Then there is a staggering cost of operation to be watched keenly if the equipment is to be made to pay. An average of ten miles to the gallon of gasoline costs 13 cents, according to current edicts of the Standard Oil. Lubricants run $1.00 per gallon and upwards. The wages of a driver, $15 to $20 per week, must be supplemented with wages for a helper, at $10 per week. Thus the cost of manual labor on the truck, not to consider its fuel expenses and the repair bills, which are inevitable, mounts to $25 or $30 per week. Experience has demonstrated that a good, reliable commercial car with a body specially built for the brick trade, may do the work of one wagon and two teams or even two wagons and three teams, according to street and road conditions.

Coming down to the last analysis, or sinking through the shale to bed-rock, as the practical yard man would have it, the certainty is established that it is not so much the fault of the equipment as it is of the system of brick delivery. Pretty nearly any investment, unless it is foolishly unwieldy, can be made to pay if it is absolutely necessitated by conditions. Whether the brick man maintains a $10,000-per-annum stable or a $10,000 fleet of motor trucks, he should be able to reap proceeds from his investment.

The prime factor in delivery expense for the brick manufacturer nowadays is that so many pieces of new work develop for him which are evidently one-load-per-day, two-loads-per-day or three-loads-per-day jobs. Building in the suburbs is responsible for this. In every city the trade finds that structural operations in the down-town district are reduced to a minimum, while the municipality may be extending its limits by leaps and bounds as residences, factories and warehouses spring up in the outskirts. The down-town skyscrapers are up to stay, and the trade finds that 75 per cent of its deliveries go in the East End or West End or North Side or anywhere except within reasonable hauling distance. A boom in the West End may help a West End yard owner, but he is sure to find it just as difficult as ever to handle trade outside his immediate territory. No general rule seems to apply for satisfactory deliveries in individual cases.

Offer Solution to Problem.

It is maintained by a coterie of brick men, which has its representatives in every city, that yard prices and team-time constitute the only satisfactory solution of the delivery question. In this method of the trade, face, hard, salmon and paving are quoted at list prices on the yard and the customer pays the haulage. Hard brick may be $7.50 per thousand at the yard, costing the contractor whose job is two hours' distant a team charge of $1.60, at the rate of 40 cents per hour. The same brick will be delivered to a job an hour away at the cost of only 80 cents. This system of team-time and yard prices is advocated almost everywhere in the trade in dealing with exceptionally long hauls, where it is expected that not more than one load per day can be accomplished.

The Motor Truck and the Brick Highway Make for Efficient Delivery of Farm Produce, Thus Reducing Living Costs.

The fault of team-time charges does not lie in the sliding scale of prices, as might be supposed. Its weak point is not that John Smith, four miles distant from the pressed brick company's yard, pays twice the delivery charge upon hard brick in comparison with the charge to Bill Jones, who is but two miles away from headquarters. Building contractors may be made to appreciate the differences in team-time and will figure their jobs accordingly, so that the owner bears the brunt of his location.

The trouble is that team-time is a variable quantity. The fallibility of human nature is clearly defined in brick-cart drivers when there is a saloon every couple of blocks along their routes. Team-time which the contractor is paying for may be consumed with the team and its load standing in the shade of the Last Chance, while the driver stands within availing himself of the final opportunity. One team may make three loads per day to a certain job, entirely to the satisfaction of the contractor, while another team with the same load but with a thirstier driver may handle three loads in two days with difficulty. Hence, the satisfaction of the contractor is destroyed and instead he becomes a venomous critic of all brick companies charging yard prices and team-time.

Cites Another Handicap.

Another feature which makes for slowness in brick delivery is the matter of setting off or dumping loads. Endless trouble is experienced in this connection. Ordinances in various cities prohibit the dumping of any sort of brick upon certain kinds of street, chiefly asphalt and wooden block. Consequently, in delivering to a job upon such a thoroughfare, the wagon men are compelled by law to set off even hard and paving brick with extreme care, so that the delicate surface of the avenue shall not be impaired. Face brick or soft brick, of course, cannot be dumped because of the danger of cracking and chipping them, but brick men have had experience with cantankerous contractors who demanded that even hard and paving, both of which are very durable, be set off as gently as though they were eggs. All of these operations consume valuable time for which either the manufacturer or the contractor, most likely the former, is paying.

There seems to be just one opportunity for the brick trade of any city to operate its delivery service on a paying basis or at least at an even break. This lies in the thorough co-operation of the trade in districting its territory and in adopting a uniform scale of delivery charges for each district. The prices for the brick themselves need not be iron-bound, if the manufacturers disagree as to their individual costs of production and yard prices, but the delivery problem is a common one and what should be sauce for the goose must be sauce for the gander.

A central district, with an average five-load-per-diem haulage radius, may be limited to 75 cents teaming charge. Other sections of the city, respectively far and near separate yards, may be rated with team-time according to the number of loads per day which they allow from a central point. Of course, it may be argued that a yard in one of these outlying sections should not bind itself to charge the same for delivery in its immediate neighborhood as a competing plant three miles away, but if the standard is adhered to strictly, the consumer must come to taw with a reasonable amount and what the yard loses in one order it will make up in another, thus equalizing the receipts of the delivery system.

Suggests Co-operation as Remedy.

There is no better field for the activity of a local clayworking organization than in adjusting delivery charges. This service is one which may lawfully be regulated in price just as trade unions are permitted to establish standards of wage for skilled and unskilled labor. Even should there be no local organization in a city's brick trade, the members of the industry may certainly co-operate with profit, just for once, in freeing themselves of a common complaint.

Although hauling charges may be standardized, it is not at all necessary for plant owners to bind themselves as to yard prices. If some members differ in their selling prices and elect to follow their own inclinations, it is presumable that they understand their individual costs of doing business and know how to figure profits.

But the district system seems to be the only practicable settlement of deliveries for the brick men. Individual concerns have adopted it successfully in the past few years where efforts to gain the co-operation of the entire community have failed. Sand men have also districted their territory successfully, adding reasonable hauling charges for distant points. The point of the entire matter is that the brick man who systematizes his deliveries and delivery charges is sure of covering the expense to which he is subjected and is, accordingly, entrenched in the unimpaired earning capacity of his plant. The other fellow is in the dark—with decreasing profits year by year.

CANADIAN CLAYS HAVE HIGH COMMERCIAL VALUE

Investigations made by Heinrich Ries and Joseph Keele and published in a preliminary report, recently issued by the Department of Mines of the Dominion of Canada, show that Alberta and the western provinces generally contain a wide variety of clays and shales of high commercial value, particularly adapted to the manufacture of pressed and common building, paving, fire and coke-oven brick, fireproofing, sewer pipe and drain tile. Many of these deposits, which cover large areas along established lines of transportation, are undeveloped.

The opening chapter of the report deals with the surface clays of the Great Plains region, in part as follows:

"As the front of the great continental glacier receded toward the north, lakes of various dimensions filled the depressions in the uneven surface of the country, and into these lakes the drainage of the surrounding land was carried, the sediment thus transported settling to the bottom and forming beds of fine stratified clay, silt and sand. Some of the clay, in these lakes, was contributed by streams flowing from glaciers at or near the margins.

"The dark gray clay underlying the brick clay in the Red River Valley is probably derived from this source. It is a massive clay, containing vertical joints faintly stratified in the upper part and carrying scattered boulders and streaks of gravel below. In time, the supply of water from the melting ice diminished, and the lakes became partly or totally drained by the cutting down of their outlets."

Referring to what is described as one of the most extensive clay deposits yet found, the report says:

"This occurs in the former bed of Lake Agassiz, the sediments of which constitute the best brick clays of Manitoba. Raised beaches at various levels are still preserved for long distances on the eastern slopes of Pembina, Riding and Duck mountains, and these mark what were once the shores of this great body of water.

Saskatchewan Clays.

"Large areas of surface clays occur in the Saskatchewan valley from Prince Albert, Sask., to Edmonton, Alta., and on the South Saskatchewan river as far as Saskatoon, Sask. These clays often occur in thick beds, showing a vertical jointing which is sometimes more pronounced than the lines of stratification.

"Evidences of similar conditions are found in clays which occur near the Red Deer river at Red Deer, in the expansion of the Bow river at Cochrane, and in the valley of the Old Man river in the vicinity of Pincher, Alta.

"Delta deposits occur at points where streams discharge into lakes. One of the most extensive deposits of this class occurs in Manitoba, and is known as the Assiniboine delta. It was formed during the maximum development of glacial Lake Agassiz. The remains of this delta show a roughly triangular area of nearly 800 square miles, between Neepawa, Brandon and Cypress River. The materials composing the deltas are more or less stratified beds of gravel, sand and clay which slope toward the lake bottom."

Shale formations in Manitoba extend from the Pembina river at the international boundary northeastward along the base of the Pembina, Riding Duck and Porcupine mountains. The system contains, in ascending order, the Dakota, Benton, Niobrara, and Pierre formations. The Dakota formation is the lowest member of the Cretaceous age. It rests on Devonian limestone, and is composed of soft, white or reddish sandstone, commonly interbanded with thin beds of shale. The Benton formation which overlies the Dakotas, is made up of dark gray carbonaceous shales. It is reported to be 178 feet in thickness. The Niobrara formation overlies and is an upward extension of the Benton. It is composed mostly of gray calcareous shale, in close proximity to a bed of limestone.

Origin of Shales.

The Pierre formation, which is composed almost wholly of shales, occupies the summits of all the higher land in the western portion of the province of Manitoba. It has a total thickness of 800 feet. These shales were originally sediments, fine-grained enough to permit of being carried by water and deposited in marine basins, and no doubt they were buried beneath still later sediments. Subsequent uplift of the land has brought them to the surface and the overlying deposits have been removed by erosion.

Shales also occur in the Pembina mountains, in the valley of Pelican lake and along the Red Deer, Belly, Little Bow and Peace rivers and Milk creek. The Laramee shale formation proper underlies a small triangular area in the Turtle mountain region of southern Manitoba. Further west a second, but much large triangular area is found in southern Saskatchewan. This area includes the Souris coal field and the Dirt hills.

The Edmonton formation underlies a belt of varying width, extending from the international boundary northward through the center of the province of Alberta. Shales are found with the coal seams in and near Edmonton, also up the Saskatchewan river, south of the capital, and westward in the vicinity of Pembina.

Shale exposures, the report says, should also be looked for in the Red Deer river within the limits of the area underlain by the formation in the Bow river near Crowfoot Crossing.

The Tertiary Formation.

The Tertiary formation overlies the Edmonton series. It consists of shales and sandstones often alternating in rapid succession, and includes the shale areas at Red Deer, Calgary, Sandstone and Pincher, Alta.

Shales are rare in the mountain region, west of Edmonton, because in most instances the deposits of argillaceous materials have been altered to slaty rock or schists. Extensive deposits of surface clays are also rare, and those which are present are mostly of small size and silty character. However, there are formations in the vicinity of Blairmore, Coleman and Canmore, Alta., and Cranbrook, Elko, Collin's Creek, Field, Yoho Valley, Nelson, Enderby, Kamloops, Guillifords, Otto Creek and the Tulameen district in British Columbia.

While limited in the extent of its clay resources, the Pacific coast region contains a large variety. The most important shale deposits are those of Sumas mountain, east of Vancouver, which, as shown by tests, represent one of the most important series found in Canada. On Vancouver Island, shales are found associated with the Tertiary coals at Nanaimo and Comox, but most of those thus far discovered appear to be too sandy or too carbonaceous for use. There are several deposits of gray stratified surface clay suitable for common brick near Vancouver. Similar clays occur in the immediate vicinity of Victoria and also on several of the islands between Vancouver island and the mainland.

MOVES INTO NEW QUARTERS.

Entire Floor to Be Occupied by Various Departments of the Sunderland Brothers.

The Sunderland Brothers Co., at Omaha, Neb., is about to make a move of much consequence to their business, and one which signifies a growth of which any concern might well be proud.

A ten year lease has just been signed whereby the Sunderlands secure the entire third floor in the new Omaha State Bank Building at 17th and Harney streets.

The building, above first floor, is "L" shaped, giving outside exposure in all four directions. The space measures more than 6,000 sq. ft. and lends itself admirably to subdivision as required by the several departments.

Especial consideration is to be given to the brick, marble and tile departments which require spacious facilities for display.

Except for solid walls here and there to furnish space for exhibits, the entire floor is to be thrown wide open without a partition of any sort except for vault, supply room, packing room, and the glass fixtures of private offices.

Mr. Albert D. Klein, manager of the brick department, has conceived some clever ideas for brick display and it is more than likely that one of the finest brick sales rooms in the whole country will be established in the new offices of Sunderland Brothers Co., a progressive, clean-cut, substantial factor in the brick business.

ACTIVE CAMPAIGN PLANNED.

American Face Brick Association to Take Up Questions of Importance.

"We now have nearly every big manufacturer in the country in the American Face Brick Association," said J. M. Adams, president of the association and secretary and manager of the Ironclay Brick Co., in his office, at Columbus, Ohio, recently. "We are now laying plans for a vigorous campaign along all lines that will be beneficial to face brick manufacturers throughout the country. Among the things that will be taken up at meetings to be held this fall and winter are the equalization of freight rates, the solving of labor troubles, the question of fire insurance on brick plants and the question of employers' liability.

Mr. Adams predicts that much good will come from the organization to its members, as it is preparing to place itself in a strong position and proposes to take up matters vigorously. The members of the association are showing much enthusiasm over the formation of the organization.

The "Publicity Magazine" of the Jones Underfeed Stoker Co., Chicago, is responsible for this: "The manager and the engineer of the Krauss Laundry at Indianapolis differ as to the cost of repairs on the Jones Stoker installed under their 100-h.p. return tubular boiler 5 years ago. The engineer says the stoker repairs have cost $5,00; the manager says they have cost but $2.50. A low cost of repairs in any event."

FOUR PLANTS OPERATED BY SPOKANE CO.

Electric Power for Two Plants Furnished by One Generator—Modern Methods of Manufacture Used Throughout

IT is such enterprising progressive companies as that of the Washington Brick, Lime & Sewer Pipe Co., at Spokane, Wash., which brought the state of Washington up to the twelfth place in rank in the clay-working industry, for the year 1909. Notwithstanding the fact that there are only 122 operating firms reported by the government, the value of the clay products for that year amounted to $2,066,735. These thriving clay plants go far towards making the Pacific Northwest a "land of golden promise" to the Eastern man seeking a location in the West.

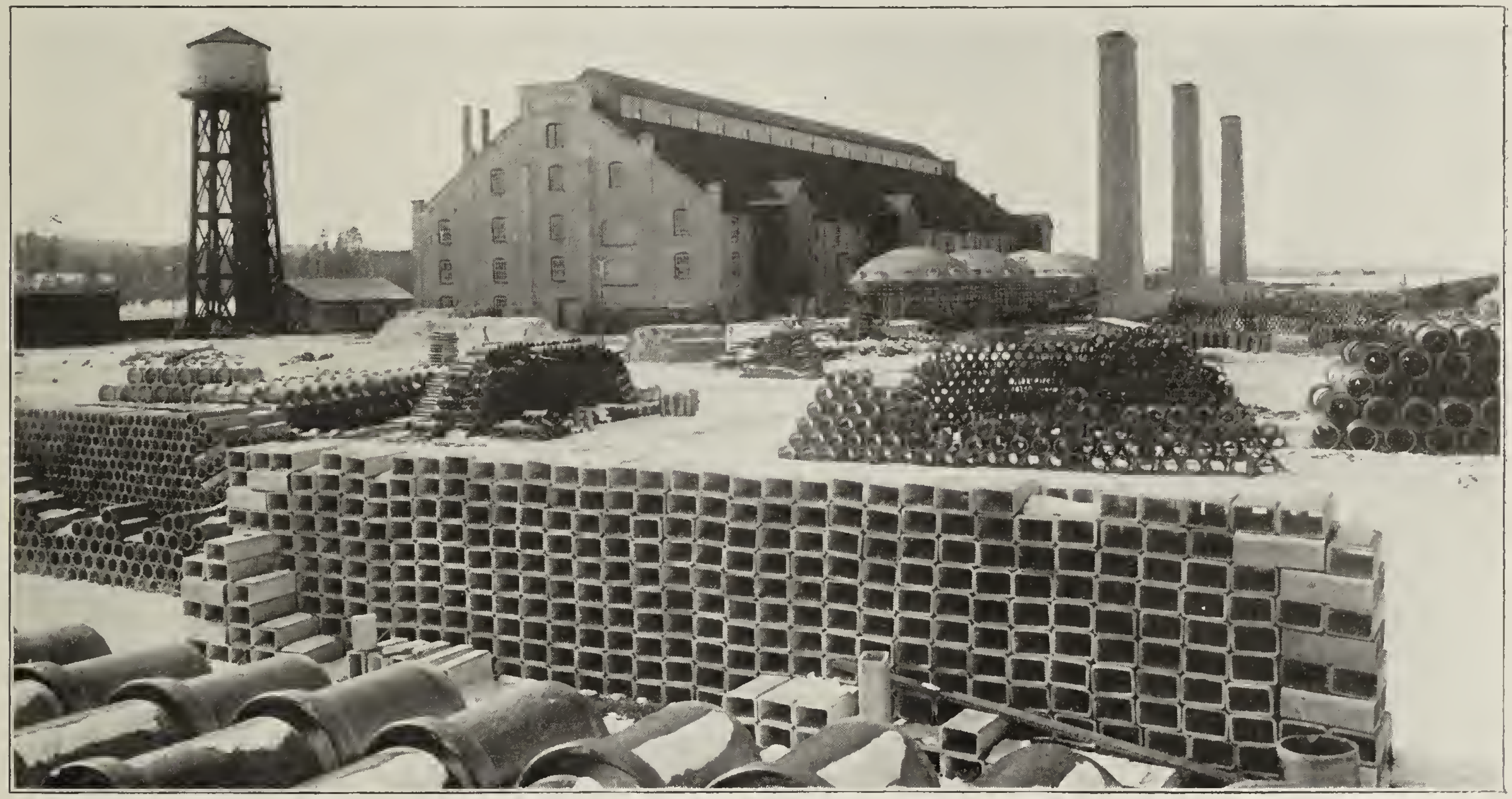
The Washington Brick, Lime & Sewer Pipe Co., while maintaining offices and headquarters at Spokane, operates four large plants, one situated at Spears, two at Clayton and one at Freeman, Wash., which make a large variety of products, including face and common brick, sewer pipe and terra cotta.

The Face Brick Department.

The face brick plant is situated at Clayton, Wash., on a spur of the Great Northern Railway, and adjacent to it is the large terra cotta works. The buildings of the face brick plant are extensive and include power and machine buildings, an immense dryer and a clay storage shed. This plant was burned down eleven years ago, was rebuilt, and was again burned down in August 1908, since which time it has been rebuilt and equipped with the most modern machinery.

The clay storage sheds at this plant are used only for storing such clays as will be needed when weather conditions prohibit the mining of clay. As the clays are very fat and plastic, it is necessary for the moisture to be drawn out, before the dry pans can handle them. For this purpose, a large dryer or hot floor has been constructed, consisting of several laterals in units, so that the various sections of the floor can be heated at different times as required. Wood is used for firing this dryer and draft is furnished by a 50-foot stack.

Overhead of this dryer are a series of trestles on which the cars from the clay pit run and from which the clay is dumped on to the hot floor. From the hot floor it is shoveled on to wheelbarrows and carried to the two 9-ft. dry pans. The discharge from the dry pan is handled by two bucket and belt elevators fifty-four feet high. The material is screened on sectional piano wire screens, the tailings from the screen running down on to a set of smooth rollers which also discharge on to a bucket and belt elevator, and the clay both from the rollers and screens is elevated either to a bin above the pug mill or on to a Jeffreys conveyor, which discharges it into a bin over a Boyd press.



Sewer Pipe Plant of the Washington Brick, Lime & Sewer Pipe Co. at Spears, Wash.

The pug mill is arranged so that it can be used to prepare clay for the Freeze "J" machine or for the American No. 2 Giant machine. The "J" machine is used exclusively for making brick and the "Giant" for making hollow ware, such as fireproofing, etc. The plant is equipped with a Richardson repress but the company states that the quality of the brick turned out by the Freeze machine and cutting table is of such a superior grade that they have not as yet made use of the repress.

In the engine room, is a 320-h. p. Allis-Chalmers corliss engine, which drives onto the main line shaft with a 30-in. leather belt. This main shaft is five inches in diameter, carried on iron trusses, and where pulleys are fitted to the various machines, they are equipped with a lock and clutch so that one machine or a series of machines can be cut out at any time desired. This engine also drives a 125 kw. generator, which furnishes light for all of the plants, as well as the outbuildings, such as the company's store, boarding house, rooming houses, offices, superintendent's residence and workmen's cottages. It also furnishes power for a freight elevator which handles the clay from the pit to the different elevators and power for the pumping plants situated one-half mile from the factory. The terra cotta plant which is adjacent to the brick plant also receives its power from this generator.

A small Atlas slide valve engine in the same engine room is connected by a belt through a 30-kw. generator of the direct current type and same voltage as the larger machine. This is used exclusively for lighting purposes but it is arranged to connect on the same power line with the pumping plant and to an auxiliary plant in the same building so in case anything happens to either generator or pumping plant, this auxiliary plant will take care of the water supply.

The Terra Cotta Plant.

Architectural terra cotta in an almost endless variety of shapes and colors is made in the immense building adjacent to the face brick plant, the machinery, as before mentioned, being driven by electric power furnished by the generator located at the first named plant. The clay used at this plant is mined at the brick plant and delivered on steel cars. The first process of preparation being similar to that at the face brick plant. After passing through the pug mill the clay is taken on trucks by means of a freight elevator, to the sweating room in the basement, where it is allowed to soak until required for use, when it is delivered to the pressers as required.

The first floor of this four-story terra cotta plant is given up entirely to slipping and glazing and the preparation of the clay; a small space being reserved for storing the stock of casting plaster used in the manufacture of molds and models. The second floor is used for pressing and chemical laboratories and here are found the glaze grinding machines which are of the ball and jar type, in which porcelain balls and porcelain linings are used. The third floor is given up to pressing exclusively and on the fourth floor are found the drafting department, pattern making room, mold making and modeling departments.

The machinery in the terra cotta department is run by a 50-h. p. motor, receiving its power from the brick department. At the side of the motor is a two-cylinder air compressor, the air being used for spraying purposes and operating air hammers in the fitting sheds. Here also is located a 10-kw. generator which furnishes power for the operation of the freight elevator, the elevator being of the direct current type while the balance of the power is of the alternating current type.

The Sewer Pipe Plant.

Two years ago the Washington Brick, Lime & Sewer Pipe Co. placed in operation its new sewer pipe plant at Spears, Wash., four miles from Spokane. This plant is considered one of the most up-to-date of its kind in the West, it having been laid out with the idea of economy in handling the goods and rapidity of operation in every department. In this connection, excerpts from a letter written by J. W. Strack, a structural engineer of Spokane, who made an inspection of the plant shortly after its completion, will be of interest:

"Recently, in company with Mr. J. S. Shedden, machine expert, I spent the afternoon at the new factory of the Washington Brick, Lime & Sewer Pipe Co., east of Spokane, and was impressed with the layout, the battery of high pressure boilers with their shaking grates, and the provision made for the economical handling of the fuel from the cars to the boiler room. In the engine room, the massive Allis-Chalmers corliss engine with condensers, pumps and feed water heaters and the 75-h. p. automatic engine and generator for the lighting of the building were all examples of the latest and most efficient types of machines.

The one main shaft from which all the machines are belted cuts down the heavy friction losses so common in factories of this character, leaving nothing but the bearing to receive attention, and in fact all the machinery is built of massive proportions, thus obviating any liability of springing and its subsequent action of forcing the shaft out of alignment.

"The machines in the factory, especially, the Stevenson wet and dry pans are massive and of the latest pattern, being substantially set on concrete foundations, the elevators for the clay being closed in to assist in overcoming any liability of excess dust in this department. The sewer pipe press is of ample proportions and the structure is such that it will not be subject to excessive strains and stresses while performing its work in turning out the sections of 30-in. pipe.

"The buildings, being of brick, are of large dimensions and the drying rooms are of ample capacity to handle the output of the factory. The dry heat flue from the kilns passes through the entire basement with its several flues for the distribution of the heat and the 24,000 feet of 1¼-inch pipe connecting to large headers will furnish heat to dry the product. The heat passing through the several floors by means of vents is given a very even distribution. These floors are served by a large elevator with a platform 9x10 feet which, with the two gravity elevators, is capable of handling all of the products and gives ample service for the economical moving of the entire product, cutting down the cost to a minimum.

Layout of Plant Ideal.

"We were particularly impressed with the large kilns which are twenty-eight feet in diameter on the inside and thirty-five feet diameter outside. All these round kilns are provided with a separate chimney or flue sixty-two feet in height, so arranged that the excess heat can be drawn off and used in the drying rooms.

"The entire layout of the plant is ideal from the standpoint of maximum output with minimum cost of handling, the materials coming in on one side of the buildings and being transported during manufacture to the other side without any retracing or extra handling, the mechanical elevators doing away with manual labor throughout.

"The fire risk is reduced to a minimum in the construction of the buildings, the water supply coming from the private well only 100 feet deep. In the large storage tank is kept a supply of water always on hand for emergency uses. The large hot well, located near the boiler room, also tends to reduce the fuel costs as the hot water and exhaust steam from the engines and the coils are returned to the hot well and used again in the boilers, thus giving a boiler feed of hot water instead of water fresh from the well."

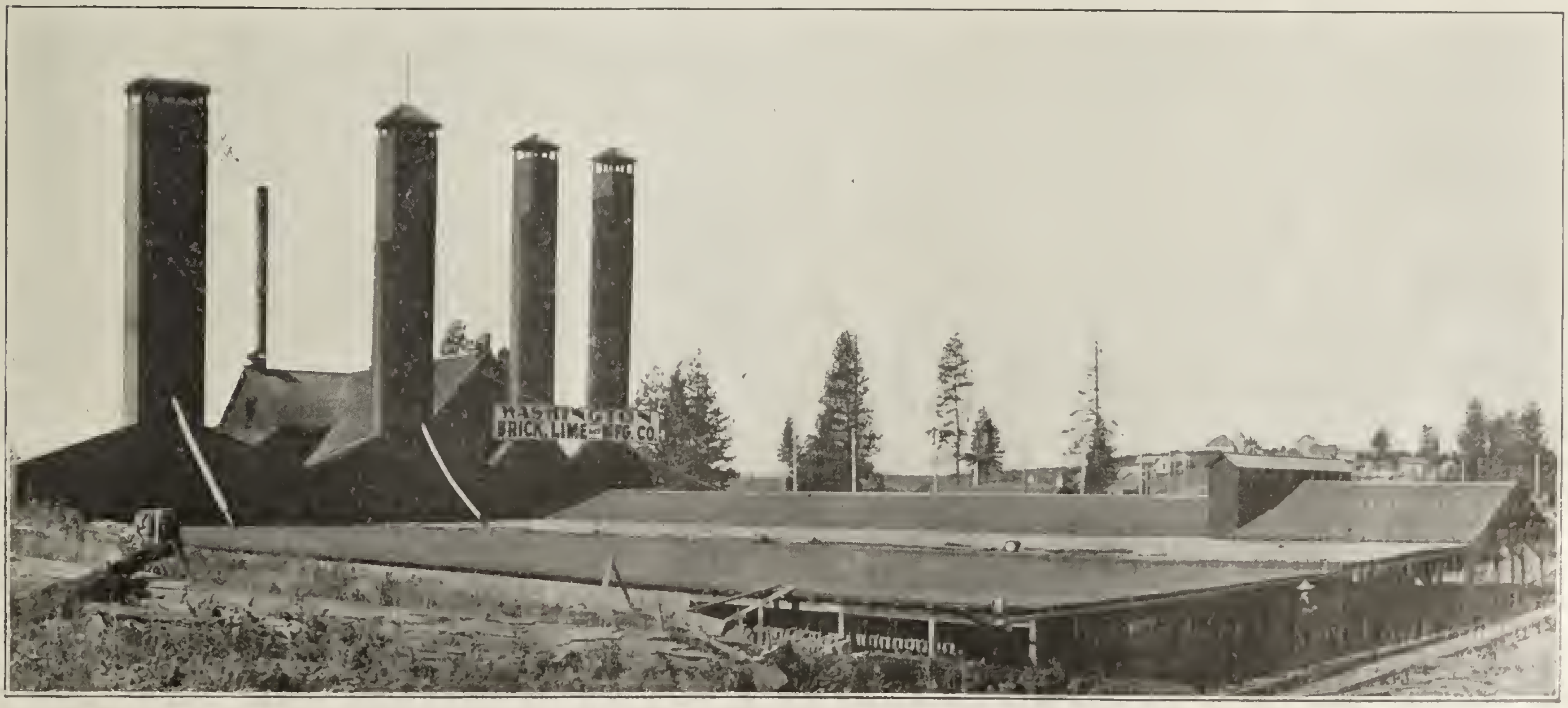
In addition to the plants above described, the company operates a large common brick plant at Freeman, Wash. This is also a model factory of its type.

The clay is dumped on to a steel sloping floor immediately over a Raymond cyclone disintegrator, which in turn discharges on to a set of large smooth rollers, made in such a manner that the rolls divide in the middle, so that when the center wears, the ends may be turned, making the rollers practically new again. From the

EXTENSIVE PLANTS OPERATED BY SPOKANE COMPANY

A Portion of the Terra Cotta Department at Clayton, Wash.

The Face Brick Plant, Adjoining the Terra Cotta Department.



The Dryers at the Common Brick Plant, at Freeman, Wash.

rollers the clay is discharged on to a 9-foot Freeze pug mill and from there into a Freeze auger machine. From the automatic cutter, the brick are delivered to an off-bearing belt, which is arranged so that off-bearers can work on both sides at the same time. The output from this machine averages 120,000 brick per day.

By means of a transfer truck, the loaded brick are pushed into a 20-tunnel steam dryer, part of which is a Standard dryer and part a National. The kilns are of the scove type and the yards have a capacity sufficient for storing five million brick, the company having at this time on hand approximately four and one-half million brick burned and burning.

The extensive business which this company has built up throughout the Northwest is an indication of the activity and general progressive spirit of the company, the officers of which are: Joseph H. Spear, president; David B. Totheringham, vice-president; Alfred Ruff, secretary-treasurer and Lawrence A. Spear, general manager.

WESTERN ENTERPRISE SHOWN BY ATTRACTIVE EXHIBITS

An attractive feature of the Building Material Exhibit, held in conjunction with the Fifth Annual Convention of the National Association of Building Owners and Managers, held July 11-13, 1912, Seattle, Wash., was the booth of the Denny-Renton Co., Seattle, one of the largest manufacturers of clay products in the country.

Pergola of Red Building Pavers, Shown by the Denny Renton Co. at Building Material Exhibit, Seattle, Wash.

The exhibit was somewhat of a departure from the usual type of booth, and was in the form of a garden pergola of red building pavers in column construction. The entrance to the exhibit was flanked by two large red garden vases holding palms and within the booth a good display of face brick with hollow partition tile was shown, products of the company's six large clay plants.

F. T. Crowe & Co., dealers in building material in Seattle, Tacoma, Portland, Spokane and Vancouver, B. C., also displayed products of the Hydraulic Press Brick Co., "tapestry" brick made by Fiske & Co., and roofing tile made by the Ludowici-Celadon Co.

A Potlatch Pipe.

The largest pipe seen on the streets of Seattle during Potlatch week was exhibited by the Denny-Renton Clay & Coal Co. in a booth erected by the company from its products at the southeast corner of Second avenue and Spring street. This was a sewer pipe, the largest manufactured west of St. Louis, and is shown in the accompanying illustration.

This booth was made entirely of clay products. Beginning at the bottom they were laid and arranged as follows:

The first two layers of brick were the standard vitrified building variety, which are practically impervious, and found in a great number of buildings on the Pacific coast—notably, the Oregon & Washington station, Seattle, and the Union depot, Tacoma.

The white plaque on the front was of matt glazed terra cotta, surrounded by pressed brick known as Renton reds. These were flanked by a light grey pressed brick speckled with manganese spots. On top of the brick were fire clay slabs which are commonly used for the lining of boilers and furnaces.

The four columns of the booth were made of blue lining. Facing up Second avenue was the big sewer pipe; the inside diameter of the pipe being 36 inches; outside diameter at the bell 48 inches. This one joint of pipe weighed slightly over 1,200 pounds. Beneath this were smaller sewer pipe, ranging in size from 6 to 8 inches. On the opposite side of the booth were vitrified electric conduits. All of these products shown were manufactured from raw material procured in and about Seattle.

Display Shown by the Denny Renton Co. on Streets of Seattle, Wash., During Potlatch Week.

GERMAN CLAYWORKERS TO VISIT U. S.

Proposed Itinerary of Distinguished Guests Includes Visits to Representative Clay Plants Throughout the Country

For many months, the German Association of the Clay, Cement and Lime Industries have, through correspondence, been arranging for a trip of inspection to various manufacturing establishments in the United States.

Dr. Otto Schott, consulting engineer and technical chemist in New York City, acting as agent for the German Association, has, with the aid of Professors Orton and Bleininger, of the American Ceramic Society, arranged for a very comprehensive trip, not the least interesting of which will be a visit to the Ceramic Department of the Ohio State University at Columbus. The tentative program is as follows:

On the day of arrival (Sept. 1st, Sunday) reception in the evening by the Technical Society of New York (German society) in the Terrace Garden, and lecture showing what the members of the party will see in America, and how things should be regarded so guests may be able to form correct conclusions. After which a social meeting will be held.

Monday, Sept. 2nd.—In company with members of the Technical Society sight-seeing in New York, especially one of the large office-buildings, and one of the apartment houses, where up to 50 families live with hotel accommodations. Those of the party who wish to go to the Congress in Washington leave on Sept. 3rd on a special train.

Wednesday, Sept. 4th.—Opening of the Eighth International Congress of Applied Chemistry in Washington. Sight-seeing in Washington.

Thursday, Sept. 5th.—Return per special train to New York. A half-day excursion, either to Haverstraw on the Hudson, where very large common brick industries may be seen, or to the J. B. King Plaster Works on Long Island, where manufacturing of gypsum products may be seen.

Friday, Sept. 6th and Saturday, Sept. 7th.—At disposal of the party, either to take part in the Congress, or do sight-seeing in New York, or visit some industry lying within close reach of the environs of New York.

Friday, Sept. 6th.—Congress meets for morning and afternoon sessions. Evening excursion around New York Harbor.

Saturday, Sept. 7th.—Congress adjourns at noon. It is planned to leave for Washington in the afternoon.

Sunday, Sept. 8th.—Visit to one of the great American sea resorts.

Monday, Sept. 9th.—Leave for Baltimore (railroad time, 1 hour). Inspection of the Union Bridge Co. lime works and cement plant; in the afternoon leave for Philadelphia (railroad time, 2 hours). Sight-seeing in Philadelphia; in the evening return to New York.

Tuesday, Sept. 10th.—Leave for Trenton (railroad time, ¾ hour). Inspection of brick plants. Evening return to New York (time, 1½ hours).

Wednesday, Sept. 11th.—Inspection of factories near New York, Rockaway, Staten Island, Perth Amboy. Evening return to New York.

Thursday, Sept. 12th.—Trip to the Lehigh District to visit cement plants and clay works (railroad time, 3 hours). Evening return to New York.

Friday, Sept. 13th.—More inspections of plants in the vicinity of New York and Keasbey, N. J. Closing Festival of the Congress.

Saturday, Sept. 14th.—Morning, leave New York for Pittsburgh. Stop at the Monongahela House. Remain about 3 days in Pittsburgh and vicinity.

During this time an excursion will be made to East Liverpool, as this town is easily reached from Pittsburgh in about 1½ hours, the members can return to Pittsburgh to stay overnight at their respective hotels.

On the occasion of the stay in Pittsburgh, a reception is planned for the visitors by the American Ceramic Society, and a banquet will be offered by the American business colleagues. In Pittsburgh inspection trips will be made to a mirror-glass factory, a paving brick plant, the plant of the Harbison Walker Refractories Co. and perhaps some coal and coke works; also visit to the Carnegie Museum.

In East Liverpool, inspections will be made of pottery works, porcelain plants, flint and feldspar mills.

Tuesday, Sept. 17th.—Leave Pittsburgh for Columbus and Zanesville. In Columbus, visit to the University of the State of Ohio, especially the ceramic department. May stop in Newark to see a glass bottle plant. In Zanesville, visit to the faience floor and wall tile factory.

Friday, Sept. 20th.—Arrival in Chicago, stop at Hotel Auditorium. Inspection of roofing tile plant, and the stock-yards. For those interested, a visit to some representative clay plants.

Saturday, Sept. 21st.—Morning, leave Chicago for Buffalo, stop at Hotel Iroquois. In Buffalo, inspection of porcelain plants and sight-seeing at Niagara Falls.

Monday, Sept. 23rd.—Evening, leave Buffalo for Albany. From Albany excursion on Hudson river to New York. Stop at Hotel Astor.

Wednesday, Sept. 25th.—About 10 a. m. departure per Steamship Cincinnati for Europe.

Thursday, Sept. 26th.—In the forenoon the Steamship Kaiserin Auguste Victoria leaves for Europe.

THE BOONE COUNTY, IOWA, CONCRETE PIPE FAILURE

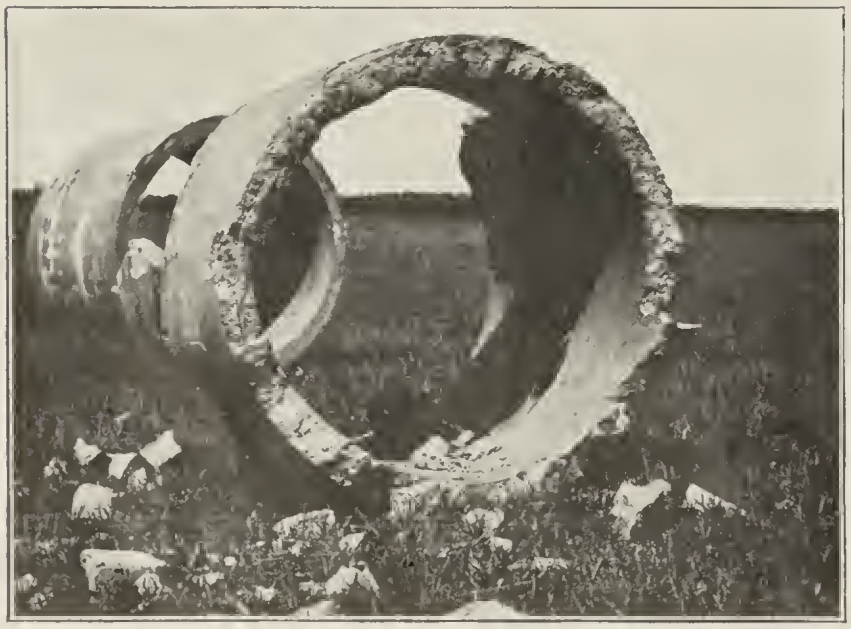
The recent failure of several thousand feet of concrete drain tile in drainage district No. 48, in Boone County, Iowa, and its unfortunate results are so typical of the general circumstances attending the attempted use of tile of this variety that we believe the report of the field engineer who was sent out by the International Clay Products Bureau of Kansas City will be of interest to our readers.

George H. Tefft, the secretary of the Bureau, gives an interesting summary of the investigation and report as follows:

"The engineer began his investigation of this failure by interviewing Mr. Chambers, the county engineer for the district. Mr. Chambers, had, as he himself expressed it, been previously stung, and therefore, refused to take the responsibility of writing specifications for concrete drain tile, and in order to stand from under all uncertainties and their effects upon himself, he proceeded to let the job under almost no specifications at all or without any stipulation save that the contractor should give a bond to insure that the tile, when placed, should remain intact for a period of five years. The tile were accordingly made by a well-known manufacturer at his concrete pipe plant at Fraser, Iowa, with no restrictions whatever, but with the knowledge that they would have to carry the nine or ten feet of cover over them.

Pipe Broken by Engineer in a Fit of Curiosity or Rage.

"It is quite apparent that he made every effort to achieve the required results; and, unlike many concrete pipe manufacturers in Iowa, he used plenty of cement. An analysis of samples taken from rejected pipe on the ditch shows that his mixture was approximately one of cement to two of sand. Most county supervisors and county engineers in Iowa have been of the opinion that if they could only get the contractor to put enough cement into his product the result would surely be satisfactory. The fruitless efforts at the Fraser plant rather exploded this idea and showed how many uncertainties are attached to all the ingredients of concrete, and that not only must the cement be there but that every other ingredient must also be present in exactly the proper proportions, and moreover, each must be perfectly sound and clean in itself—an ideal condition scarcely ever possible to achieve by a board of county supervisors, who have had eyes only for the lowest bids and have never made any appropriations for the expensive and elaborate inspection necessary.

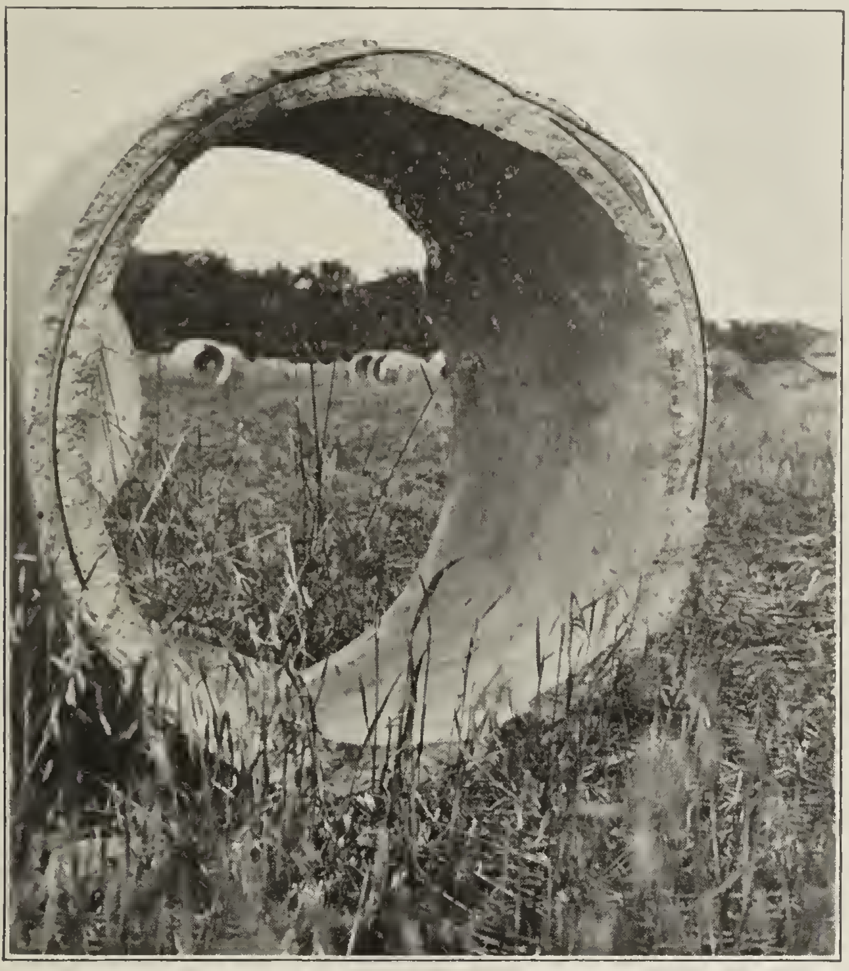

Method of Tamping Concrete Pipe Often Causes Faults or Cleavages in a Transverse Direction Where Two Qualities of Material are Used.

"Upon the arrival of our representative, the entire contract was in a three-cornered snarl. Several thousand feet of pipe had already been delivered and installed. The 36-inch pipe were made in three-foot lengths, three inches thick; th 32-in. pipe in thirty-inch lengths; 2¾ inches thick; smaller sizes in proportion. Three or four wires were introduced, circumferentially, in the mid-section of the pipe as an attempted reinforcement. The pipe, as it lay in the trench, had about two feet of earth over it and so much of it had already cracked on the quarters, under that light load, that the engineer refused to accept it; and, holding the contractor from finishing the backfill, directed him to start work again with a smaller size where the cuts would not be so heavy. The smaller sizes, in some cases, held for a few days without cracking, but at the end of that time, so many of them had failed that it was evident all were inadequate.

"The county had let the making of the pipe to one man, before mentioned, and the laying of it to another. Although the installing contractor might have been able to lay 400 feet of it a day with good luck, he stated that he had never received more than 150 feet of it in a day, and that since the break-downs and failures he had suffered additional delay; so the county was forced to ask the pipe manufacturer for an additional bond absolving the county from all damages claimed against them by the installing contractor. This the manufacturer flatly refused to do, so that at the present time thousands of feet of ditches lie open, corn fields are cluttered up with rejected pipe, and the three interested parties are waiting on one another while the season, in the meantime, advances and threatens to find them, for another year, unprepared to take care of the water which otherwise might have been saved from standing on these valuable lands.

Rejected Pipe, Some with Small Cracks, Others Crumbly—Unfilled Ditch Shown at the Left.

"It is assumed that the engineers and supervisors of Boone County would immediately perceive the absurdity of endeavoring to play a game of baseball, draw poker or billiards without some rules to regulate the game, even though everybody was perfectly willing not to cheat. The absurdity of venturing to achieve a good, permanent drainage system with the uncertain mixture of the uncertain materials usually obtainable for concrete in Iowa (namely, the arbitrary measure of cement, the quantum suff. of moldy sand with its sprinkling of crumbly gravel) mixed and manipulated by a man unable to control the many conditions of materials, mixing, watering, curing, etc., affecting the final result; under the direction of an engineer too conservative to direct; and all neatly arranged in a three-cornered block system of contracts, each depending on the other—the absurdity of this seems never to have occurred to them before.



Reinforcing Hoops in Mid-Section of Pipe Add No Strength but Make it Easier to Remove Pipe from Ditch.

"It is even doubtful if any of the parties concerned have begun to see the humor of it yet. The unfortunate manufacturer, McHose, still continues to mix one part of cement and two of aggregate together in the fond hope of attaining a payment on at least a part of the job; his financial backer, Mr. Charles Otis, of Boone, still has faith to believe in sober seriousness that concrete pipe, as he expresses it, is as good as the man who makes it. The farmers of the district who are likely to lose another year's drainage are naturally unable to see where the fun comes in.

This Pipe, Cracked at Four Opposite Points, is a Fair Sample of the Condition of the Majority of Those Still in the Ditch.

"One redeeming streak of humor, however, appears to glimmer in the direction of Engineer Chambers who, in his recommendations to the supervisors that they should take very radical steps in the matter, mentions in his report to them that they could obtain from the yards of a certain manufacturer of vitrified clay pipe several thousand feet of No. 2 thirty-six inch vitrified clay tile, and that this might get them out of the hole. He also states, not without the suspicion of a smile, that the only reason he has for liking reinforced concrete pipe is that after the pipe has failed the reinforcing wires enable it to be pulled out of the ditch on the hook conveniently, all in one piece instead of in several sections.

"But now, although this is all very funny for the county engineer who has nothing to lose, the drainage business continues to be a very serious matter to the land owners of Iowa. They cannot raise full crops without drainage; thep are deeply disappointed and often financially embarrassed when their drains do not last. They know, or should know after repeated trials that the experimental mixtures of cement, Iowa slough gravel, cupidity and unskillfulness, sometimes sold under the classification of concrete drain tile, can never become a standard and can never be depended on to make permanent drains for the permanent farms of Iowa.

Rejected Pipe, Showing Dry White Surface, Due to Improper Curing.

"How long will county supervisors in Iowa continue to treat drainage as a temporary experiment? When will they begin to specify permanent vitrified clay tile drains? They know, or should know by this time, that good vitrified clay pipe is an indestructible material and a standard material used for drainage for the past 5,000 years."

Advertising has been defined as "the art of making two people buy where only one bought before. It is a science designed to make the other fellow trade his cash for your goods."

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. SEPTEMBER 1, 1912 No. 5

GET TOGETHER, CLAYWORKER

You are Sleeping While the Enemy is Wide-awake to the Possibilities of the Day and is Seizing the Trade that Belongs to You.

Mr. Clay Product Man you are suffering from anasthesia. Your MORE ENERGETIC NEIGHBOR, the cement man, has injected an etherized solution of up to date publicity work into your system and you are SLEEPING AWAY YOUR OPPORTUNITIES.

Arouse yourself. YOU ARE NOT MAKING CLAY PRODUCTS FOR THE FUN OF IT—YOU ARE MAKING THEM FOR THE PROFIT THERE IS OR SHOULD BE IN THEM.

Of course you wake up once in awhile. But you only stretch, yawn and then drowsily resume your somnolent attitude and the enemy smiles and, in passing you, spreads the fruit of his activity from coast to coast.

If business is dull it's your own design.

What you ARE today or what you ARE NOT is of your making.

You ARE awake? Don't fool yourself. Of course you have proclaimed your wares—sometimes you really have made a big noise in the little world you live in, but you MUST NOT BE CONTENT WITH INDIVIDUAL EFFORT. YOU MUST MAKE YOUR FELLOW CLAYWORKER WAKE UP. YOU MUST SEE THAT HE MAKES A NOISE WITH YOU—THAT WHATEVER HE DOES IS DONE IN PERFECT UNISON WITH YOU—THAT YOU AND HE CONTINUE THE GOOD WORK UNTIL THE GREAT BUYING AND BUILDING PUBLIC SITS UP AND TAKES NOTICE OF YOU.

And when you have received this attention, DON'T QUIT. Don't rest on your oars. Keep after him. Keep hammering away.

You have something to sell. You have something that is WORTH selling. But the trouble is no one knows it. The little homebuilder and the big homebuilder doesn't know the good points about brick and clay products, like you do. ALL HE KNOWS IS WHAT THE CEMENT MAN AND THE LUMBER MAN HAS TOLD HIM AND THAT WON'T SELL YOUR PRODUCT.

The Cement Man is a busy fellow. He isn't letting any grass grow under his feet. Listen to this: In ten years he sold $282,000,000 worth of building material and when he started out in the first year of that period he was only selling $8,000,000 worth, MOST OF WHICH WAS FOR MORTAR IN BRICK BUILDINGS.

But the Cement Man wasn't content with supplying just the mortar for the brick houses. HE WANTED TO SUPPLY ALL THE MATERIAL. So he set about to do it and he ALMOST DID it.

How? Why, by presenting a united front—by persistent hammering—by everlastingly drumming into the ears of the public the word "cement."

And think of it! From the small beginning of $8,000,000 worth of material, most of which, mind you, was for mortar only, the Cement Man has succeeded in PUTTING IN CEMENT HOUSES IN PLACE OF BRICK UNTIL HE IS SELLING NEARLY $300,000,000 WORTH ANNUALLY TODAY.

And please do not lose the point. MOST OF THIS ENORMOUS SUM TOOK THE PLACE OF YOUR CLAY PRODUCTS. Catch that?

Someone cries that the country has grown in those ten years and that this increase the Cement Man has shown is natural. IS it natural? Let us see. In this ten years—the period from which our figures are taken, clay products have shown a development of fifty per cent. You smile? Of course that is SOMETHING to brag about—this fifty per cent, but don't forget the COUNTRY HAS BEEN GROWING AND THAT YOU HAVE BEEN GROWING ALONG WITH IT. And don't chuckle too much for your growth has been brought about without much effort on your part. YOUR growth WAS natural. It followed the development of the country.

But how about the Cement Man? What was HE doing in that same period? HE GREW, TOO, BUT HIS GROWTH AMOUNTED TO MORE THAN SEVEN HUNDRED PER CENT!

Was that a NATURAL growth? Scarcely. That seven hundred per cent represents a FORCED demand—a use of cement that was inconsistent with the NATURAL advantages that clay products possess.

Doesn't this make you pause and think? Isn't it worth your while to inquire what brought about this forced demand? Isn't it worth your while to take an analytical view of the situation and seek the solution to a problem that concerns you most vitally?

You know, beyond a question of doubt, that BRICK MAKES A MORE LASTING MATERIAL —that it is more economical in the long run. You

KNOW its **ABSOLUTE SUPERIORITY** over **ALL OTHER** materials.

What is the trouble? Why haven't the figures been reversed? Why hasn't brick jumped seven hundred per cent? Why hasn't cement shown only a growth of fifty per cent?

Like the Postum man says, "There is a reason."

The Cement Man made up his mind **HE WAS GOING TO SUPPLANT BRICK WITH HIS MATERIAL.** He saw the Clay Product Man sitting idly by, content with the **NATURAL** growth. He got busy. He told the Public about cement. He cried it out morning, noon and night. He used every sensible form of publicity he could find. Soon the Public began to believe some of the things he said. Who wouldn't? If you heard your neighbor and everyone you ran across talk about cement every time you started to build something, wouldn't you get the fever to **EXPERIMENT**?

Well, the Public did, at least. The Cement Man **FIRST CREATED A DEMAND FOR HIS PRODUCT. THEN HAVING MADE A MARKET, HE SOLD CEMENT.**

And in the meantime what happened to the Clay Product Man? Did he wake up? Not much. Occasionally some fellow down in Georgia or over in Pennsylvania or across the way in Illinois or some other section, aroused a little, stretched, figuratively speaking and then settled back to a comfortable position and **WAITED FOR THE PUBLIC TO COME TO HIM.**

If the Public **WANTED** brick he made them and delivered them. If it **DIDN'T** he closed up his plant and went fishing, growling in the meantime about the "popular craze" and "the lack of business" and "business going to the demnition bow wows."

"We've got the best material," he would say. "If the Public wants it the Public will buy it. Brick will sell themselves."

That's where he made his mistake.

Brick may be the best material but they **WON'T SELL THEMSELVES**, any more than will a yard of calico hidden away on a dark shelf in the big department stores.

YOU may **KNOW** that brick is a superior material, but the **PUBLIC** does not. You may tell yourself until you are black in the face that brick is just the thing to build Jone's bungalow out of but, unless **YOU TELL JONES** and **SHOW** him that brick is the proper material, Jones will use cement or lumber or something else.

You've got to crawl out of your shell of reserve, Mr. Clay Worker. You've got to get into the limelight of publicity. You've got to let the Public **KNOW** of the superiority of your product over all other materials. When you have done that you will have created a demand for what you manufacture.

Publicity is the road to business success. But it must be a well-organized publicity. It is not enough that one man here and another there proclaims the merits of his product. There must be a **UNITED** effort. There must a **WIDE-SPREAD** campaign. There must be hearty **CO-OPERATION**, and **ALL** this must be unhampered by petty jealousies and niggardly economy.

In your association—the organization that has been formed to promote your interests, is the place to do this work. The success of the Cement Man has shown this. The growth of the great industries of the nation prove this.

As an illustration take the fruit growers of California. One of the great branches of this industry —the orange growers, found itself facing a problem. The men that made up this important part of the fruit business **KNEW** they had a superior orange to the Florida orange, but the Florida fellows had the bulge on them.

The great market for oranges was in the East and in the Middle West. Freight rates figured somewhat in the matter, but that wasn't where **ALL** the trouble rested. The Florida growers were **GETTING THE PUBLIC INTO THE HABIT OF BUYING FLORIDA ORANGES.**

The California growers decided that **SOMETHING MUST BE DONE.** They got together. They talked over the situation. They knew they could raise enough fruit to supply the country for they had the land, the climate and all the natural requirements to produce it, but if they did their oranges would rot on the trees because there **WASN'T A DEMAND FOR THEM.**

They decided that if they could create a demand for their fruit—a wider market, they could sell all they could raise and get good prices, too.

How to create this demand was the question. Someone suggested an association. The idea appealed to the growers. They organized and the California Fruit Growers Association was the result.

Then the association got busy. It not only took the publicity end but it created a selling campaign. The sum of $100,000 was appropriated for the first season's work. This was spent judiciously and the phenomenal success of the campaign has inspired the association to continue its labors and expand and take in the other fruit growers.

The work has been so thorough there are few of you readers who have not heard of "Sun-kissed Oranges." It was so well-carried out that "Orange Day," "Apple Day," "Grape Day," and "Raisin Day" are as familiar to us as the Fourth of July.

But the work did not stop with the publicity end. The traffic department got better freight rates, because these growers, clubbed together as they were, could **MAKE SOME IMPRESSION** on the great railway lines. Better terms were made with the commission men, too, and a general improvement in trade conditions was noticed from the start.

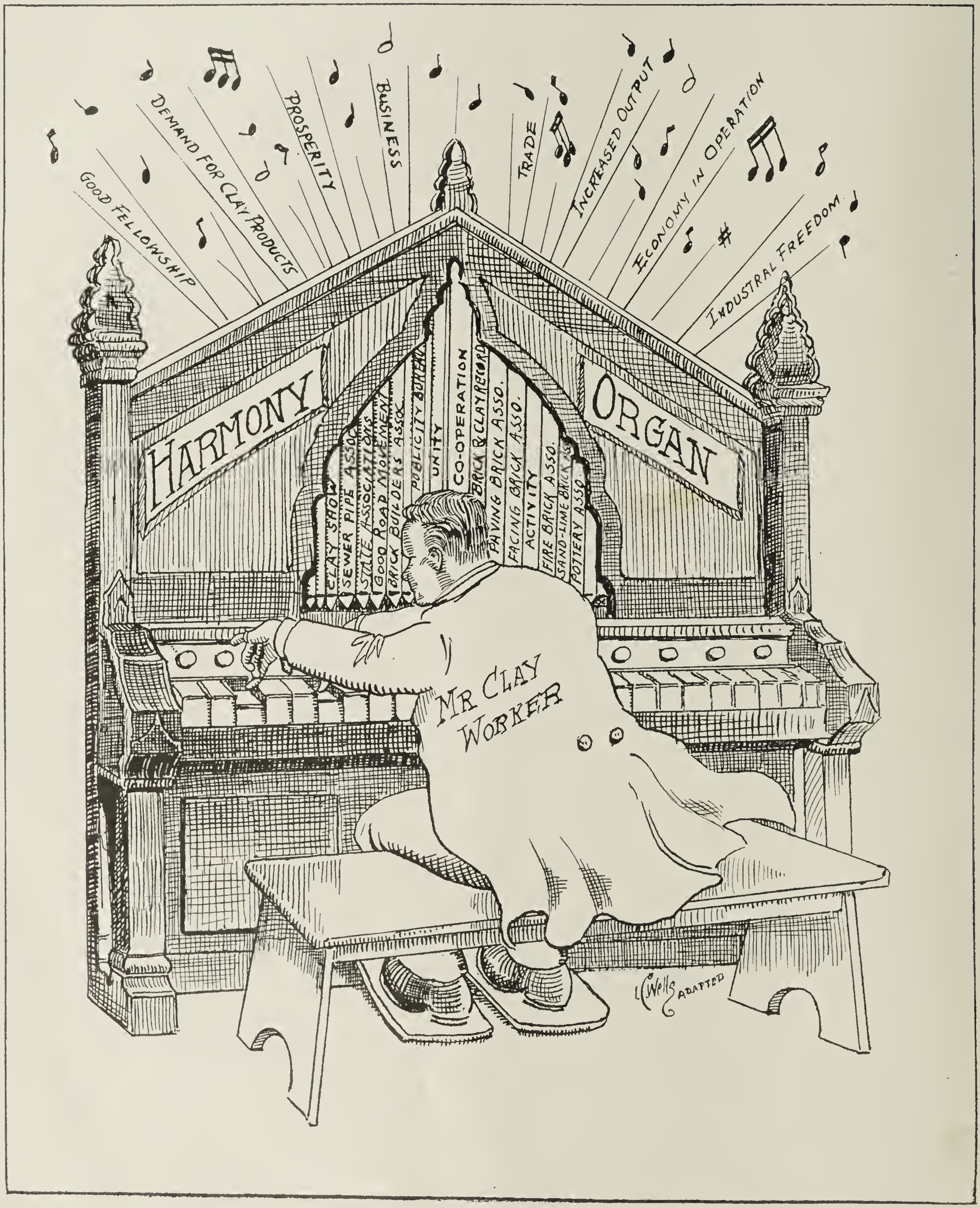
The power of this association is so great—its system so admirably worked out, it is possible to start a train load or several train loads of fruit towards the East. After the shipment has started, should a change in the market conditions warrant it, the traffic manager uses the telegraph and switches off a car or two or a whole train load of fruit to some closeby storage house and there holds the shipment until market conditions improve.

These illustrations give only a hint of the great work of this organization, but what has been done by these California fruit growers can be done by the clay product men.

However, there is one point to be kept uppermost in mind and that is this: It wasn't just one or two fruit growers here and there that took hold of things. It wasn't just the big fellows that did all the work.

The California Fruit Growers Association **IS COMPOSED OF THE LITTLE FELLOWS** as well as the big fellows. They **ALL** joined the movement. The fund just the same as did the big fellow. He took little fellow contributed his share to the general a voice in the affairs of the association. He recog-

GOOD MUSIC, MR. CLAYWORKER.



nized that **WHAT WAS GOOD FOR THE BIG FELLOW MUST BE GOOD FOR HIM**, and the results have proved his stand to be right.

Now, if this sort of co-operation is good for the fruit grower, for the canning factory man, for the cement man or for any other fellow, **WHY ISN'T IT GOOD FOR THE CLAY WORKER?**

The clay-worker already, in a way, has recognized the necessity for organization. Already he has answered in the affirmative. He has formed associations. The building brick man, the paving brick man, the fire proofing man and many of the other fellows in the various branches of the great clay industry have organized associations.

Some of these associations are doing a great work. Others are organized but are resting on their oars because they haven't had the support from the very people they propose to benefit.

It is not enough that you organize. You must organize **THOROUGHLY**. One or two paving brick manufacturers here and there **DO NOT CONSTITUTE AN ASSOCIATION** that is going to put to rout the concrete or asphalt man.

A HANDFUL of building brick fellows from each state formed into an organization **IS NOT GOING TO FORCE CLAY PRODUCTS INTO THE BUILDINGS OF THE NATION.**

Neither will one-third of the fire brick fellows or one-half of the representatives in any of the other branches of the industry bring success.

EACH BRANCH OF THE INDUSTRY MUST ORGANIZE TO THE LIMIT. The small fellow and the big fellow must lock hands and wade into the battle with the spirit of fight in him. Not one-third, nor one-half nor even three-fourths of the manufacturers can form a successful organization. **ALL MUST JOIN. ALL MUST WORK.**

Any association **MUST BE AN ASSOCIATION FOR THE WHOLE**—not for a few. The aim must be to benefit the industry as a unit—not as individuals.

That's where the cement makers won out. Suppose each maker of cement had started out to fight for himself? Do you believe he would have done what he has done as a body politic?

Suppose each California fruit grower had mapped out the publicity campaign in his own individual way and went to work? Granting that he put just as much vim into his efforts, unsupported or encouraged by an organization, do you believe he would have achieved as great results for himself?

Some persons are so narrow in their vision—so short-sighted, they only can see a few inches from the end of their noses. These fellows are the ones that cry: "I won't spend my money to help the other fellow. Let him help himself as I help myself."

That's poor business policy. **EVERY DOLLAR YOU SPEND TO CREATE A DEMAND** for clay products throughout the nation means dollars in your pockets. The returns may not come back to you today or tomorrow or even next week, but they **WILL** come, as they have to the orange grower in the west, and they **WILL** come many times over.

Prosperity in the clay product industry means prosperity to **YOU**.

If it was the custom for the builder of the small bungalow to use brick as his material instead of lumber as he does today, wouldn't it mean much to you, Mr. Brickmaker?

If it was common usage to use vitrified brick on the thoroughfares or the country roads instead of macadam or the other materials wouldn't it benefit you, Mr. Paving Brick Man?

If it was the rule, rather than the exception to use clay products in the many other places for which they are adapted, wouldn't it bring a greater revenue to the other branches of the industry?

There is **ONLY ONE WAY** to bring about conditions like this and that is **CO-OPERATION.**

YOU MUST CO-OPERATE, Mr. Clay Worker. The orange grower has shown you the advantage of presenting a united front—of making a concerted effort, and the fact that there **ARE** organizations in the clay industry which are doing good work in their field—limited as their activity necessarily must be without the full support of their people, proves that there are **SOME** clay workers who see the usefulness of association.

What you must do is to join the associations already formed. You, Mr. Brickmaker, should get in touch with the organization that represents your particular trade. You must **BECOME A FULL-FLEDGED, ACTIVE MEMBER** and you must **TAKE A VOICE IN THE CONDUCT OF ITS** affairs, offering your suggestions and your financial support.

This same advice applies to the paving brick man, to the pottery man, to the terra cotta man, to the fire brick and fire proofing man—it applies to every branch of the trade where there is an organization.

And, once you have joined this movement for the good of **YOUR** welfare and the welfare of **YOUR** brother, do not rest on your oars, but **BE AN ACTIVE MEMBER—A WORKING MEMBER.**

And to the other representatives of the clay workers who are not already banded together this same suggestion applies. See that you, too, are linked together in an association of willing, faithful, tireless workers. This doesn't mean just one or two of you, but **ALL** in your trade.

There should **NOT BE A FEEBLE EFFORT IN ONE SECTION** of the country, a **SPASMODIC** campaign in **ANOTHER** or **NOTHING** at all done **STEAD, THERE SHOULD BE A GENERAL CAMPAIGN** and there should be an awakening everywhere. The people should be aroused to the necessity, the advantage, and the economy of using clay products.

The brickmaker, the tile maker, the terra cotta maker—in fact all down the line, the clay manufacturer would find an increased demand for his products. Instead of running his plant to partial capacity as he is doing, he would be running it to its **FULL CAPACITY** and the small plant would have to be made into a large one to take care of the greater demand.

This is not visionary. It is all possible. If the cement man can increase the demand for his product seven hundred per cent in ten years by this same sort of co-operation and publicity, an does it with a material that time has shown to be far inferior to the clay product, why can't the clay worker do the same thing with a material that **STANDS THE TEST** of time, of frost, of fire and of flood?

"Brick and Clay Record" believes that organization as suggested in this editorial is the salvation of the clay industry today. It is so convinced that this is true it wants to offer its pages to a full and comprehensive discussion of the subject and with that idea in view invites every reader of this magazine and every friend of that reader, who is interested in the general welfare of the clay worker, to write us his candid opinion about the suggestion.

“Brick and Clay Record” is **YOUR** journal, Mr. Clay Worker, and we want you to feel that **YOU HAVE A VOICE** in the discussion of anything it presents to you for consideration. You are **VITALLY** interested in the subject brought to your attention in these columns and we suggest that you sit down **RIGHT NOW**, while the fever is in you, and write us a short letter telling us **WHAT YOU THINK** about the problem. You don't have to write a book, two lines on a postal card will answer the purpose. We have enlisted ourselves in a work that promises, as we see it, to do a great good and it will be a great encouragement to us to know that we have **YOUR** endorsement and **YOUR** active support.

“Brick and Clay Record” further invites the various associations in the industry to send their expressions on the subject. It goes further and offers these associations the use of its columns in a systematic campaign to swell its ranks and thereby make it possible for the successful launching of the general publicity work such as has been outlined here.

“Brick and Clay Record” is absolutely unselfish in presenting its suggestions to you members of the clay industry. We recognize the necessity for action and feel it our duty as a representative organ of the clay workers to enlist ourselves in the intiative work.

No attempt has been made to suggest a detailed plan. We leave that to **YOU** who are to do this work and who are to **PROFIT** by it.

“Brick and Clay Record” has no desire to dictate or rule. It merely suggests the necessity for the work outlined here, and then, having inspired you to **ACTION**, it will content itself with smoothing the rough road of the pioneer work and leave **YOU TO WORK OUT YOUR DESTINY**, in your own way, assuring you that it will ever be ready to lend its assistance and hearty co-operation at any and all times.

If you have reached an understanding in your own mind as to the necessity for prompt action don't do like you have done before. Don't place the stamp of approval on the idea, declare it a good thing and then sit back and wait for the **OTHER** fellow to act.

It is up to **YOU** to do something. **WITHOUT YOUR** active support **NOTHING** can be done. What is your first step, Mr. Clay Worker?

MAKE SCHOOL HOUSES SAFE AS JAILS.

According to “Insurance Engineering,” for March, school houses to the value of $1,000,000 burned during January and February. In view of the figures the editor of that paper asks: “It it not of consequence to build a school house better than a jail?”

We believe that it is not only of consequence to build schools better than jails, but to more fully protect them from fire after they are built. Every time there is a school house fire the lives of little children are jeopardized. If the Collinwood disaster is repeated whose will be the responsibility? Whose will be the blame?

SELECTION OF BRICK TRADE NAMES.

Southern Manufacturer Turns the Matter Over to Wife—Results Satisfactory.

In a recent number of the “Industrial Index,” published at Columbus, Ga., there appeared a story which is of unusual interest at the present time, when every wide-awake brick man is endeavoring to select a catchy trade name for his product. The story, is in part, as follows:

“The writer recently heard of a rather pretty little story as to how the special lines of high-grade brick manufactured by the Standard Brick Co. of Macon, Ga., received their names. There's lots in a name, one Mr. Shakespeare to the contrary, notwithstanding, and when the name is particularly applicable to the character and quality of the article, in the case of a manufactured product, it adds to the attractiveness of the product in the mind of the public.

“Nowadays, everything that is worth making is worth naming, and this applies to brick as well as bric-a-brac. So, when President W. E. Dunwody of the Standard Brick Co. decided to name his leading lines of fancy face brick he didn't name 'em at all, but very wisely invoked Mrs. Dunwody's assistance.

“Mrs. Dunwody studied the texture and general appearance of the best looking products and also the names of the new dress materials of the day, and thus it was that “Cravenette” and “Ratine” brick came into existence. Today these names are almost household terms among leading contractors of the South, and they will doubtless be interested to hear how the high grade face brick to which they are so partial came to acquire their rather artistocratic names. “Cravenette” and “Ratine” have long had significance as terms describing textures, but it is well enough that the words be given more elasticity and a broader meaning, and that they are now doing duty in describing the characteristic appearance of Southern-made clay products of high degree.

“This has been a very big and busy year with the Standard Brick Company, by the way. The year started out with almost unprecedented rains that kept clay pits filled not only in Macon, but in many other Southern cities, and the floods continued, with more or less frequency, as late as June. But despite these unfavorable weather conditions, the Standard Brick Company has turned out more brick this year than its plants usually yield in the first seven months of the year, and the demand for its products has been almost unprecedented. This achievement—and it was quite an achievement under the circumstances—is not due to accident, but to work of the hardest kind. President Dunwody is not only a good all-round business man, but he is an engineer and practical manufacturer, and has spent much of this year out at his brick plant, personally and actively directing operations there.”

THE PITTSBURGH EXPOSITION.

Extensive preparations are being made to make the annual Pittsburgh Exposition a success, especially from the manufacturer's standpoint, and it is to be regretted that an extensive display of clay machinery could not have been shown there. Several prominent manufacturers of clayworking machinery had planned exhibits, but owing to the busy season could not spare the time to prepare them. Among the number was the J. D. Fate Co., Plymouth, Ohio, who it was announced would exhibit, among other equipment, its new electrical lubricating device, but we are informed the company will not have any machinery on display at the exposition this year.

MAKES LARGE QUANTITIES OF BRICK

The Hudson River Region Has Produced Over Eleven Billion Brick—Clay Deposits Capable of Producing Sixty Billion More

THE Hudson River (New York) region is one of the most interesting brickmaking regions of the United States, if not in the world, according to a recent report of the United States Geological Survey. This region extends along both sides of the Hudson River from New York city to Cohoes and embraces ten counties, nine in New York and one in New Jersey. The region is commercially interesting not only because it contains immense deposits of brick clay but because it is the principal source of a cheap supply of common building brick for New York city and vicinity—the largest market for building material in the New World.

Brick have been made in this region for nearly a century. According to the history of Rockland County, N. Y., efforts to establish the brickmaking industry were made before 1810, with more or less success, attempts having been made even before the Revolution. The brick made prior to 1810, however, were used only locally, and it was not until that year that a kiln was burned for a general market. Even these efforts to market the brick were not successful, but in 1817 James Wood, an Englishman who had learned the trade of brickmaking in his native land and was attracted to Haverstraw by the vast quantity of clay and the unlimited supply of wood for fuel, leased a piece of land on the river shore and started the first successful brickyard in Rockland County.

To Wood is given the credit of discovering in this county, in 1828, the advantages of using coal dust as an ingredient of brick. This process had been used in England but was little known, and a long and bitter litigation ensued to demonstrate the advantages of this method. Wood also invented a mixing and tempering machine, similar to the present ring-pit wheel, and an improved mold. Altogether he seems to have been a great factor in developing the brickmaking industry along the Hudson.

Other prominent early brickmakers were the Allisons and David Munn, the latter being largely instrumental in advancing the industry. To Richard A. Ver Valen is given the credit of having invented, in 1852, a machine for making brick that was a great improvement over any made up to that time, and this gave a fresh impetus to the business.

Even in those early times the labor strike was not unknown in the region. In 1853 one was caused by a reduction in wages and was attended with so much violence that troops had to be called out to suppress it. In 1877 another strike occurred, and the operators sent to Canada for laborers. When the Canadian workmen arrived violence was resorted to by the strikers and the troops were again called out.

Notwithstanding the enormous quantities of brick made in the region at the present time, the method of manufacture is practically the same as that used in the early days of the industry. Attempts have been made to use these clays for other varieties of clay products but with little success, so that building brick is the only product made of this material along the river.

The number of common brick marketed in the Hudson River region since 1901 has been 11,390,111,000, valued at $60,407,258 or $5.30 per thousand. These brick, if laid flat, would make a "sidewalk" 20 ft. wide around the world. It has been estimated that the clay in the New York portion of the region will furnish 1,200,000,000 brick a year for the next 45 or 50 years.

In 1911 the product was 926,072,000, valued at $4,717,633, or $5.09 per thousand, as compared with 1,142,284,000 brick in 1910, valued at $5,544,600. This was a decrease of 216,212,000 brick, or 18.9% and $826,967, or 14.9%. In both quantity and value these are the smallest figures for any year since 1903, except only 1908. The average price per thousand for the region has ranged from $4.42 in 1902 to $6.99 in 1905.

New York's portion reported 93.46% of the brick in 1911 and 92.79% of the value of the entire region. This consisted of 865,510,000 brick, a decrease of 218,174,000. It constituted more than 75% of New York's output of common brick in 1911. The value of the common brick of this region was 42.98% of all of New York's clay products and 54.68 of its brick and tile products.

New Jersey's portion of the production is small, being but 60,562,000 brick in 1911, or only 6.54% of the output and $340,097 or 7.21% of the value. This, however, was an increase in both quantity and value of output. The average price per thousand increased from $5.42 in 1910 to $5.62 in 1911. It was 53c. higher than that for the whole region and 56c. higher than that for New York's portion of the region.

URGES GOVERNORS TO ATTEND ROAD MEET.

Gov. Wilson Makes Personal Appeal to All Executives to Be Present at Atlantic City.

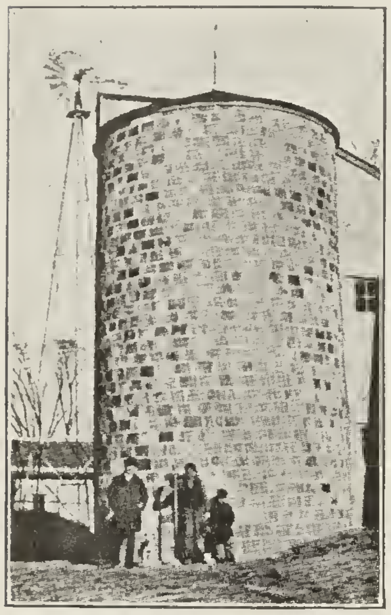
In the midst of the preparation of his speech of acceptance, Gov. Woodrow Wilson paused long enough to write individual letters to every governor in the United States urging that they attend the American Road Congress to be held in Atlantic City, Sept. 30 to Oct. 5, or that they at least appoint delegates to represent their states. While many of the states have arranged to have booths where their maps and publications will be displayed, Gov. Wilson expressed his desire that all the states be represented personally either by the governor or by delegates appointed by the governor.

Gov. Wilson is taking intense interest in the Congress, and the gathering in Atlantic City probably will mark the only meeting of the Democratic candidate for the presidency with his Republican opponent, President Taft. Gov. Wilson is to make the address of welcome and President Taft has consented to make an address.

Not only the fact that both Gov. Wilson and President Taft will be present but the general character of the Congress makes it certain that it will be one of the biggest conferences outside of those of a political nature, ever held in the United States. It is quite probable that President Taft and Gov. Wilson will have an opportunity to meet the Premier of Canada in the course of the Congress as the officials of the Dominion are showing great interest in the Congress and have indicated that it will have their full support.

COMPARATIVE COST OF SILO BUILDING

Experience Shows Clay Block Silo the Most Satisfactory, Durable and Economical in the Long Run—Cost Reasonable



The use of the silo has increased at an amazing rate, since its introduction, a few years ago, and it has proved a moneymaker, not only for the manufacturer, but for farmers, stock and dairymen. Many claim that by its use, a saving of from 40 to 50 per cent of corn fodder is effected, and well preserved silage has proven a remarkably cheap and successful winter food for cattle.

After a "try-out" of wooden, concrete and clay block silos, the latter has been voted by farmers, as by all odds, the most satisfactory.

In a recent issue of a concrete journal, our attention was attracted by a statement that the cost of a concrete silo, 15 ft. in diameter by 36 ft. high would be about $238. Feeling that a comparison of the cost of concrete and clay block silos would be of interest to our readers, we wrote a prominent manufacturer of silo block and his reply is substantially as follows:

"For a 15x36 clay block silo, the material, as manufactured at our plant, would cost f. o. b. the factory $204.85. This is for our vitrified perfect curve and radial and silo block, but if the square block were used the price would be $124. The reinforcement, cement and labor are not included in the above.

"From the low calculation of the cost of the concrete silo, we feel very positive, that it will be a concrete silo that will not give satisfaction, as it is well known that if the concrete is made moisture proof, it will be far more expensive than the vitrified hollow clay block and there is where the great trouble comes in with the concrete silo block as well as concrete building block, that the poor and good concrete block look alike when finished, but in course of time the poor concrete will show up and the defects will be seen and the cracking and collapsing of the structure is the result.

"As far as our sales of silo block are concerned, we have done fairly well.

"We have had peculiar experiences with the great majority of farmers that are wishing and asking the highest prices possible for their cattle and grain, butter and eggs, but if they in turn are to pay a higher price for high quality goods, most of them object, and along this line we have made several requests to the farm paper represensatives, they assist in educating the people to use quality instead of wanting things cheaper.

"All this works a hardship on the manufacturer that has been making high grade goods; but, of course, in time we hope better results will come.

"While I have been in the brick business only a little over three years, it strikes me there is a large percentage of darn fools (if a person may dare to use slang) that are trying to manufacture not how good, but how cheap, and are carrying ads in many prominent farm journals. Only yesterday we came in competition with a plant that is unable to pay its coal bills, but is cutting prices."

CLAY SHOW FILMS IN DEMAND.

Much Enthusiasm Created Throughout the Country by Exposition Pictures, Now Being Shown in the West.

The moving pictures of the Clay Show have met with popular favor, wherever shown and have been the means of arousing much enthusiasm for clay products among home builders. Then, too, they have proven a great incentive to clay men to make exhibits at the coming show.

After being shown extensively in Pennsylvania, Ohio, and other eastern and central states, the films are at present, attracting much favorable comment throughout the West and Northwest, where they have been shown at Los Angeles, Spokane, Seattle and many other prominent cities and towns, by F. S. Hayfield, who takes them with him in his travels and shows them to interested groups of clay men, architects, builders and contractors, which he gathers together in various places through which he passes.

The management of the Labor Day celebration in Chicago sent in a special request for the films which they wished to show at the evening entertainment to be given in a hall. It was necessary to run off an extra set of films for this occasion, and much interest was shown in clay building materials by the large company present.

H. H. McDonald, assistant secretary of the N. P. B. M. A. wired for the reel showing brick pavements and exhibited them every day, last week, at the Ohio Centennial and State Fair, held in Columbus. As there was, at the time, an active campaign being waged for the passage of the Good Roads Amendment, on Sept. 3rd, the showing of these films at such a prominent place as the State Fair was most opportune. For this occasion it was also necessary to have extra films made, as the others were in use in the West, and it was felt that the opportunity to boost brick paving was too good to let pass.

These interesting and instructive films are available for these purposes through the courtesy and generosity of R. C. Penfield, president of the Clay Product Exposition Co., who had the foresightedness to have the pictures taken, during the progress of the show. These later were enlarged upon. An interesting romance, in which clay products played a prominent part, was added, affording an opportunity to show the merits of the brick home. A trip through a brick plant was an interesting addition, also a reel showing many magnificent streets and highways paved with brick. All the views are of a most interesting character and reflect much credit on the clay industry.

A new sanitary plant is to be started at Clarksburg, W. Va., according to late information, and it is likely that the plant of the Radford Pottery Co. will be utilized for this purpose.

J. H. Connley, who has purchased the plant of the Crown Brick Co. at Berlin, Conn., has it in good shape for work.

To produce better ware at lower cost—to secure new ways and means of saving time, work and worry, is the chief aim of the manager and superintendent. This department is open to suggestions and practical hints along these lines. If you have any suggestions to offer, send them in. We will be glad to give space for helpful ideas.

THE BURNING QUESTION.

The Problem of Accumulation of Ashes and Cinders Puzzles Montana Man.

One of our readers from Montana writes us the following letter, asking information as to proper methods of burning brick with coal when grates are used:

"Editor of 'Brick and Clay Record':—Referring to an article in your August 15th issue, written by Allen E. Beals, describing the method of burning brick along the Hudson River, would say, I use the same style of kilns, but am obliged to use wood mostly as the coal ashes and cinders accumulate and stop up the arches. I have never been able to burn ware for 50 or 60 cents per 1,000, although I own my own coal mine and the coal only costs me only the price of getting it out. I have a good grade of bituminous coal, testing about 10,000 B. T. U. What I would like to know is just how the fire in the arch is handled with coal, if grates are used? If grates are not used how are the ashes kept away? We cannot keep our fires clean and maintain enough heat with coal only."

The question has been answered by Mr. A. J. Kautz, a consulting and erecting engineer for brick plants, as follows:

"Replying to the inquiry of a Montana brick maker, will say that all clays or shales require different treatment if burned in the same kind of kilns. The Montana man complains of the coal and ashes that accumulate in the arches. This trouble is always found where wood is used for fuel as after the flame is burned off, there is a quantity of charcoal left that will not burn because the air cannot get under it. This will keep piling up in spite of the best care. I would suggest in using grates, that they be built so as to extend into the kiln one-third of the way on each side. These grates should be at least twelve inches wide and there should be an ash pit under the grates about eighteen inches deep, which should always be kept clean. This may be easily accomplished with a shovel made for the express purpose. To clean out the fires, I would suggest that he have a piece of iron made in the shape of a quoit or washer ten inches in diameter, sharp on its edges and about an inch thick. In the center there should be a hole four inches in diameter. This should have an iron handle made of one-inch iron, long enough so that it will extend out of the kiln about four feet when the other end is being used to clean out the grate fire. This device should be run under the fire in and out and if there are any clinkers, they can be broken out by lifting the handle up, then the clinkers may be removed by the hook made for the purpose.

"When firing a kiln of this kind, good judgment must be used and if there is a small spot in the fire burned out, one shovel of coal on it will be sufficient. Do not put on any more until it is needed, because it will make the arches too hot. The coal that is put on the dead space will burn when the arch gets hot but this should not be fired often because, on account of the lack of air, it will soon pile up. Many brick are burned in this manner by firing only when and where needed."

SUITABLE KILN FLOORS.

Expert Answers Question of Paving Brick Manufacturer—Open-bottom Floor Preferable.

An Alabama paving brick manufacturer wrote asking information as follows: "I would be pleased to hear the opinions of various superintendents as to what kiln bottom is considered the most suitable in a round down-draft kiln for burning paving block. If open or spider bottoms are used, what measures should be taken to prevent sand (which must be used in kilns) from filling up the flues."

The question has been answered by an expert who has given much study to the kiln question, as follows:

Regarding the inquiry as to which make of kiln bottom is most suitable for burning paving block: The bottom known as the "Spider" bottom is not as successful as it might be, as with it there is no means of controlling the heat. The open bottom is preferable, but it has its disadvantages—it allows the heat to escape and the product at the bottom of the kiln is usually not burned hard enough. There should be enough solid bottom in a kiln to act as a retarder to retain the heat in order to burn the brick hard.

The draft flues should be large enough to carry off the waste gases but not so large as to impair the burning.

Regarding the question of sanding your product to keep it from sticking would say that if you use a solid kiln bottom, or have a certain amount of your kiln bottom solid, while the kiln is being emptied the sand can be gathered up so as to prevent it from getting into the flues. The draft flues are amply large so that they only need cleaning about once a year, which would be only a very small matter.

"Anti-Laminators."

Knives, placed in the pugmill between the die and the pugmill, are being used by English brickmakers to prevent lamination of brick. The "anti-laminators," as they are sometimes caller, are large cutting blades placed immediately at the back of the die so as to cut up the laminated clay before it enters the latter. This device has been in use in Germany for some time, and to its use is attributed the general freedom of most foreign brickmakers from the bug-bear of lamination. It is the opinion of English brickmakers that lamination is chiefly due to the shaft of the pugmill causing the production of a number of different layers of clay which do not properly unite with each other, eventually forming cracks in the brick.

By using the above-mentioned knives the layers are said to be thoroughly mixed, and lamination avoided.

LAVA BRICK.

Excellent Brick Made of Waste Materials from Our Island Possessions.

The manufacture of building brick from lava is a new accomplishment which is daily being made use of in Honolulu.

In our island possessions there is a wealth of lava and coral, and some far-seeing person conceived the idea that it might be possible to utilize these two "waste products," and accordingly, samples of the lava and coral were sent to the American Clay Machinery Co. at Bucyrus, Ohio, and after a number of tests were made, it was found that the lava could be crushed into excellent sand and from the coral sufficient lime could be secured to make it possible to produce an excellent sand lime brick. These brick are made from 10 per cent of lime and 90 per cent of sand. These materials are mixed thoroughly and after being dampened slightly, are pressed into brick in unusually heavy presses. The brick are hacked upon iron cars which are run into steam tight cylinders. The heads are bolted on securely and live steam at a pressure of 125 pounds is turned into the cylinder for 12 hours. This slacks the lime and hardens the brick, making what it really an artificial stone. These brick are very true and smooth and are of an attractive appearance. Where the ordinary clay brick requires from 30 to 60 days before it is ready for use, the sand lime brick can be used within 24 hours after its making.

Another feature of advantage is that in such locations where clay cannot be found suitable for making brick and where there is plenty of clean, sharp sand, these brick are easily produced. To build a city from destructive lava and useless coral is an accomplishment which is made possible by the enterprise of Honolulu business men and Ohio brains.

LEGAL DECISIONS

Rulings Which Are of Interest and Importance to Clay Manufacturers and Shippers

Test of Negligence in Methods, Machinery and Appliances.—The Supreme Court of Pennsylvania holds that the test of negligence in methods, machinery, and appliances is the ordinary usage of the business. One cannot be convicted of negligence if he employs in his business the methods and appliances in general use by those engaged in a like business. On the other hand, if he fails to use such methods and appliances and an injury results therefrom, he may be required to convince a jury that his methods and appliances were of equal or superior merit to those in general use.—Rocap vs. Company, 79 Atlantic Reporter, 769.

Contributory Infringement of Patents.—A United States Circuit Court says that contributory infringement exists where one knowingly concerts or acts with another in an unlawful invasion of a patentee's rights. If such assistance is given by furnishing an essential part of an infringeing combination and the part furnished is adapted to no other than an infringing use, such contribution makes him a contributory infringer. On the other hand, if the part furnished is adapted to other and lawful uses, in addition to infringing uses, then an intent to furnish for infringing use must be established before the furnisher can be held a contributory infringer.—General, Etc., Co. vs. Sutter.

Termination of Right of Stoppage in Transit.—The United States Circuit Court of Appeals, Eighth Circuit, says, in the bankruptcy case of the Paterson Company, 186 Federal Reporter, 629, that a vendor has no right of stoppage in transit after the purchase from him, to whom he has invoiced and billed his goods, has surrendered the bill of lading to the railroad company at the destination named therein, has rebilled them to his vendee at another place, and they have gone on to that destination. It is only while goods are in transit between the vendor and his purchaser that the right of stoppage in transit exists in the former.

Making Agents by Ratification.—One may make another his agent by ratifying such other's assumption in the matter, and thereby become liable both to such other and to the third party with whom he deals, as well as by an original contract of employment. Such ratification, the Supreme Court of Wisconsin says, in Garlick vs. Morley, 132 Northwestern Reporter, 601, may occur as well when a person without authority in fact from the principal assumes to have it, under another falsely pretending to represent the principal and to employ a sub-agent, as where there is no intermediary in the matter. True, there can be no ratification within the meaning of these rules without action on the part of the principal based on knowledge of the facts; but the ratification may appear circumstantially as well as expressly. It may be presumed by conduct such as by carrying out the contract and accepting the benefits in like manner as if the person assuming to be authorized to represent him had authority in fact, he at the time of such apparent approval having knowledge of all the essential facts, and particularly the assumption of agency. The court also holds that if a person actually or apparently clothes another with authority to represent him generally or in a particular line of business, he is bound by whatever contract such other may make within the scope of the actual or apparent authority.

Price in Contracts of Sale.—It is elementary law that a contract of sale must be certain as to the thing sold, and designate the price to be paid for it, and it is well settled that if a contract of sale to be performed in the future is uncertain and incapable of being made certain in the essential particular of the price to be paid for the thing sold, neither of the parties can be held to its terms, nor recover damages for its breach. But it is also true generally, a District Court of Appeal of California holds, in Jules Levy & Bro. vs. A. Mautz & Co., 117 Pacific Reporter, 936, that where no price is fixed in a contract for the sale of a commodity the law, upon a delivery and acceptance of the thing sold, implies an understanding between the parties that a reasonable price is to be paid, and in such a case the contract will be deemed to be executed or completed.

ROUTE OF THE NATIONAL ROAD.

Movement to Pave "Old Pike" Arouses Discussion as to Its Exact Location.

Since there has been such wide spread interest taken in the movement to rehabilitate the old national road, which extends from Washington, D. C. to St. Louis, Mo., much discussion has been aroused as to the exact location of the road and efforts have been made to secure an authentic map, showing the towns and cities through which the road passes. In the July first issue of this journal, considerable light was shed on the matter, since which time additional information from various sources has been tendered. Through the courtesy of John D. Shoop, assistant superintendent of Chicago schools and a former resident of Ohio, we are enabled to present the accompanying map of Ohio, showing the direct course taken by the road in that state.

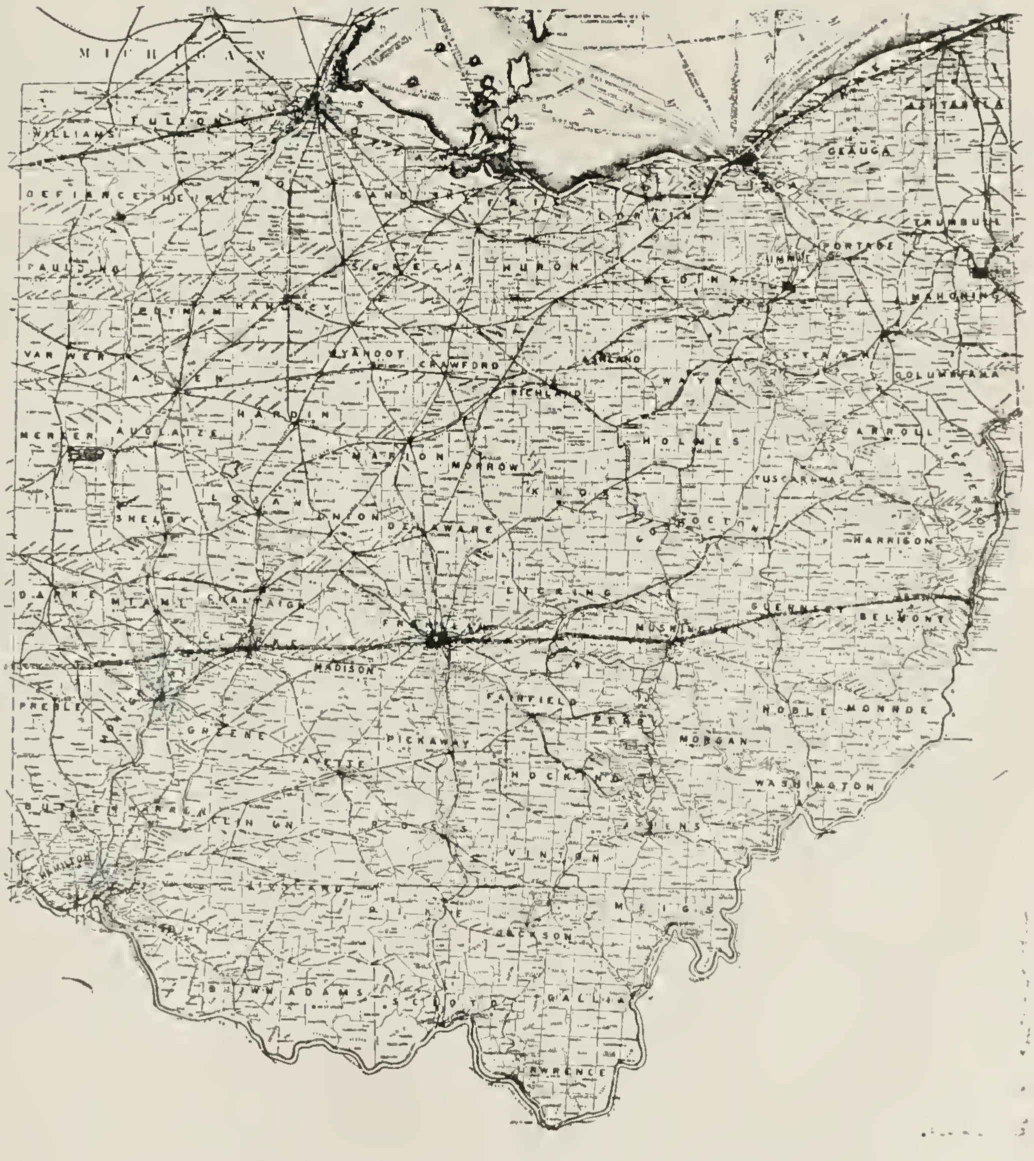
Leaving Wheeling, W. Va., the road passes through Belmont county at St. Clairsville, then through Guernsey county, passing through Washington and Cambridge, on through Muskinghum county, passing new Concord, Georgetown and Zanesville, then on through Hebron in Licking county. In Franklin county the road passes the towns of Columbus, Rome and Alton. In Madison county it passes three miles north of London, through West Jefferson, Lafayette and Somnerford to South Vienna, Harmony, Springfield and Donaldsville in Clark county, then across the corner of Miami county at Phoneton. From there it passes through Montgomery county north of Dayton, through Fadnor, Englewood, Swanktown, Arlington and Bachman, then through Pueblo county at Lewisburg, Ebenezer and New Paris, thence into the state of Indiana, where it goes through Indianapolis, Brazil, Terre Haute, and some say Paris, Mattoon, Charlestown, Hillsboro, Litchfield on to its terminus at St. Louis.

If any of our readers have additional information to offer in this connection, we will be glad to have them communicate with us. In the meantime some action should be taken by paving brick manufacturers to interest residents along the road in the paving of at least a portion of it with brick. Only recently the city council of Brazil, Ind., let bids for the paving of a portion of this road, east of the city with tarvia. As Brazil is known far and wide, as a "clay center," it is a lamentable fact that any other paving than brick should be used in the town or immediate vicinity. What is needed, is more progressive publicity work by paving brick men and more personal educational work among neighbors and friends. Don't hesitate to talk brick paving to every man you meet.

OHIO WOMEN FOR GOOD ROADS.

Many Conventions and Mass Meetings Held to Further the Good Cause.

While the progressive women of the country are taking an active interest in politics, we are pleased to note that they are not neglecting the good work begun some time ago in the Good Roads Movement and they are especially active at this time in Ohio, where many conventions and mass meetings are being held in all parts of the state, to arouse the people to the importance of voting for the Good Roads Bond Issue on the third of September. Under the auspices of the National Good Roads Association, more than a quarter million pieces of good roads literature have been distributed and the work is well under way for the organization of a thousand of the most prominent women of the state to work for the movement.



Map of Ohio, Showing Location of National Road.

One of the most active workers in the campaign is Honorable Martin Dodge, ex-director office public roads, who has for many years been connected with the National Good Roads Association and several years ago was a prominent factor in the holding of Good Roads Conventions in seventy-seven of the eighty-eight counties of the state.

At a mass meeting held in Cleveland Women's Club Rooms in the Cleveland Athletic Club Building, Aug. 17th, among the prominent speakers who addressed the meeting we note the names of Arthur C. Jackson, president of the National Good Roads Association; R. C. Penfield, president of the American Clay Machinery Co., and Hon. Martin Dodge, ex-director office public roads, Washington, D. C. Mr. Penfield, who is an enthusiastic worker for good roads, purchased 50,000 good roads buttons for the ladies of the state, requesting that the ladies secure a promise from the men to whom the buttons are given, to vote for good roads, and earnestly support the twenty-ninth amendment on September 3rd, and also assist in securing other voters.

All brick manufacturers throughout the country should be interested in the passage of this bond issue as it will mean the expenditure of $50,000,000 for the construction and maintenance of good roads in Ohio. Without doubt, in the building of these country roads, many thousands of "pavers" will be used, if proper measures are taken by the paving brick interests, to educate the people to the superior advantages of brick paving.

EFFICIENT HIGHWAY ENGINEERS NEEDED.

Effort to Be Made at Road Congress to Meet the Demand of the Age.

A practical effort to bring the supply of expert highway engineers to the point where they will be numerous enough to meet the demand for their services is to be made at the American Road Congress, to be held on the Million Dollar Pier in Atlantic City, September 30 to October 5. At the present time, with the people of the United States spending more than $200,000,000 a year for the improvement of highways, the demand for expert highway engineers exceeds the supply. There is to be a conference of educational institutions at the American Road Congress to be directed by the Society for the Promotion of Engineering Education, and through this conference efforts are to be made to induce the leading universities to establish specific and practical courses for the instruction of highway engineers.

At the present time, there are about eighty-two universities devoting some attention to highway engineering. The instruction in this branch of engineering, however, is in most cases, merely part of the general training of engineers, so that there will be a sufficient number of trained men to handle the great problem that has been thrust upon the United States by the widespread agitation for a better system of public highways that will reduce the cost of hauling crops and permit shipments by farmers at all seasons of the year.

It is a well established fact that the chief cause of failures of brick pavements has been improper construction, due to inefficient supervision. Therefore, it is of the utmost importance that paving brick manufacturers should take an active part in the movement to better conditions in this particular and no better opportunity could be afforded than that offered by the meeting to be held at Atlantic City this fall. We trust no time will be lost in making arrangements for a large delegation of brick men to attend this meeting.

CITY ORDER HANDICAPS PAVING MEN.

Excludes All But Union Brick in Peoria, Ill., and Shuts Off Source of Supply.

Peoria, Ill., brick paving contractors find themselves in a peculiar dilemma consequent upon the resolution adopted by the city council to the effect that hereafter all brick used in paving operations shall come from establishments employing union labor only. It is declared by the contractors that there are only three union brick yards in the United States. One is in Tyler, Tex.; another at Streator, Ill., while the third constitutes the recently unionized yards in East Peoria. This practically reduces the supply to the product of the East Peoria yards, and that is only a drop in the bucket.

The paving contractors consequently find themselves shut off from supplies of material and on that account will not be able to enter bids. They hold that it would be folly to make a contract and find themselves unable to fulfill its terms. As a result street paving improvements will be held up indefinitely. The board of local improvements may order the paving ot certain streets, but they will find no bidders for the work from the fact that they will be unable to obtain adequate supplies of material.

The present paving season is drawing to a close and the full effect of the city council's resolution will not be felt until next season.

News in Paving Brick Circles.

The contract for the brick to be used in paving North Ninth street, Cambridge, Ohio, has been awarded to the Noble Brick Co., of Glenwood, at its bid of 62½ cents per square yard.

We are told that the reconstruction of the best sections of vitrified brick streets in Louisville, Ky., is based upon the practice of treating the surfaces with a new supply of filler. The Second-street work, illustrated in a recent issue, has never received new brick since it was laid eighteen years ago. Once within that time, the street was refilled and sanded, after the rains and wear of a decade or so had succeeded in tearing cracks in the surface. The brick themselves, vitrified as they are, have proved to be practically indestructible.

In the report of the U. S. Geological Survey Press Bulletin No. 60, on the mineral resources of Central Illinois, this is said of the clay in the vicinity of Peoria and Pekin:

"The thin deposit of loess, or fine clay, which covers the gravel brought down by the ancient glaciers furnishes good material for the manufacture of excellent common red brick, and the section north of Peoria has several brickmaking establishments."

Getting the Women in Line.

The next Women's Good Roads Convention will be held on November 1st and 2nd, 1912, at the La Salle Hotel, Chicago, Ill. Plans are being made to hold an International Women's Good Roads Convention in Chicago, during the Clay Show period, February 26 to March 8. March 8.

It is well known that when the women of the country become intensely interested in any movement for the betterment of the home and community they accomplish wonders. Get the women of your community interested in the good roads movement, and incidentally instill into their minds the superior advantages of brick paved roads and then bring them to the international convention next spring.

WAR DECLARED ON SWAMP LANDS.

Crop Productions to Be Doubled; 80,000,000 Acres of Land Reclaimed, Increasing Values $1,500,000,000.

By F. G. Moorhead.

In a recent issue of the "Technical World," F. G. Moorehead tells of the reclamation of submerged lands by extensive drainage. The subject is of such importance and interest to our drain tile manufacturers that, with the permission of the publishers of the "Technical World," we print the article in full. While a stupendous amount of drain tile has already been used in this country, Iowa farmers alone having laid 125,000 miles, recent developments show that drainage is still in its infancy and the proposed extensive drainage of swamp lands will mean the consumption of immense quantities of drain tile, providing a market for the tilemaker for years to come. The accompanying illustrations were furnished us through the courtesy of Jno. J. Harman of the Harman Engineering Co., Peoria, Ill., and G. G. Wheat of the Northwestern Tile & Clay Products Co., Emmettsburg, Ia. The article follows:

Dredges at Work in Emmet County, Ia., where a Large Area of Land Was Drained.

Tiling of Iowa Farm Lands Advanced Prices from $65.00 to $125.00 Per Acre in Five Years.

Ten years ago a man bought 640 acres of land in New Madrid County, Missouri, paying $1.25 an acre. Not an inch of the land was visible, the entire section being covered with water, ranging in depth from one to six feet. The neighbors called the man crazy. They said the investment might turn out all right if he went into the fish business, but so far as farming was concerned, even the primitive Oriental ways of raising rice would not work out there. But the man was just a little bit shrewder than his neighbors. He was not much interested in the forests of gum and oak and cypress, so dense that it was difficult to push a skiff through. He was looking ahead to the inevitable day when a drainage ditch would be dug along one side of the bog-lake and the section of land at last would be visible. The drainage ditch was dug and six years after the land had been bought for $800 it was sold to an Iowa farmer for $11,200, or $17.50 an acre, showing a profit of $16.25 per acre. The Iowa farmer likewise saw into the future with the eyes of faith. The land was yet a bog, but the owner dug lateral ditches and made the land dry enough to farm. He cleared it, selling the timber for enough to pay the cost of the work. On the first 125 acres thus ready for cultivation, he planted a crop of corn between the stumps. The black alluvial soil, enriched by fertilizing elements deposited by the floods for countless years, produced ninety bushels of corn to the acre the first year. Last year the Iowa farmer was offered $41,600 for the land which had sold for $800 nine years before. He refused the offer, although it meant a profit to him of $30,400 on an investment of $11,200 in two years.

Again. Ten years ago forty acres of inundated land in the same Missouri county likewise sold for $1.25 an acre. It was covered with a heavy growth of oak, gum and elm. Two years ago the timber was sold for $5 an acre on the stump. The land was drained by means of a lateral ditch and at a cost of $10 an acre was cleared for farming. Last year it yielded seventy bushels of shelled corn to the acre, the crop selling for $1,000. Last fall the owners refused $75 an acre, an increase on the value from $50 to $3,000.

Drainage work is now in progress in the state of Missouri alone which will reclaim a million acres, enough to provide ten thousand farmers with 100-acre farms; enough to add 75,000 more to the population of the state; enough to increase Missouri's corn yield forty million bushels a year, which at fifty cents a bushel is a matter of $20,000,000 annually; not to be snuffed at, even in these piping times of prosperity. And the cost of reclaiming this empire is estimated at no more than one-half the increased corn yield for only one year. Add to this the 500,000 acres of land, destined to be reclaimed in the adjacent swamps of Arkansas and the magnitude of the work now well under way a couple of hundred miles below St. Louis will be appreciated.

At the north end of the great swamp, where it narrows to a width of thirty miles between the Ozark hills and the Mississippi river, six streams that drain 1,100 miles of hill country pour their waters over half a million acres of swamp. To relieve this condition a diversion canal thirty miles long, with an embankment fifteen feet high on the south side, was dug straight east from the hills to the Mississippi three miles below Cape Girardeau, diverting the waters of the six streams to the big Father of Waters. South of this diversion canal, the basin of Little River is a flat, swampy bottom ten to twenty miles wide and ninety miles long, so flat and devoid of outlet that it is always under water. In this district, fifteen hundred land owners, in six counties, organized the Little River Drainage District under the state law which provides that a majority of the land owners may form such districts. The plan includes the digging of a main channel and floodway eighty-five miles long and six hundred miles of lateral ditches. This will drain all of that vast swamp and conduct the waters into the main canal of the St. Francis River drainage system, which will carry it on down to enter the Mississippi River at Helena, Arkansas. Already forty large dipper dredges are at work on the Little River drainage project, which when completed will cost four million dollars.

But the immense task of reclaiming an empire in the upper Mississippi valley does not stop with the Little River drainage project. Where a half million acres of arable land will be added here, there remain a million acres to be added by the St. Francis river drainage project, which is the most stupendous reclamation work now under way in this country. The great volume of water which must be carried from the floods in the Ozarks may be realized from the fact that the St. Francis floodway is planned of sufficient capacity to carry, at extreme flow, a stream of water 2,000 feet wide and eight or ten feet deep. This water is brought down by the innumerable rivers and streams which originate in the Ozark hills and which spread out over the country in lagoons and lakes, some places barely covering the land, in other places of a depth of thirty or forty feet, rivers which end nowhere but which keep a million acres of alluvial soil, from one hundred to 1,000 feet deep, (soil which has been built up by the silt brought down by the Mississippi and deposited there ages ago) from being tilled. The work has proved too great for individuals, though they have started out often enough and bravely enough, but Canute like have found themselves futilely ordering the waters to stand still, when every law of nature compelled them to advance and keep an empire from being planted to corn and fruit. The estimated cost of the St. Francis drainage project is $7,600,000 and the total area to be drained in the two states is a million acres—an enormous addition to our agricultural lands.

Nor does the work of reclaiming swamp lands in the grain belt end with these two immense projects in Missouri and Arkansas. It is conservatively estimated that the reclamation "of 80,000,000 acres of bogs in the central and eastern portions of the United States would add a value of $1,500,000,000 to these now worthless areas, without taking into consideration the future rise in the value of the lands. For instance, the reclamation of the two and one-half million acres of marsh lands in Wisconsin alone would add a value thereto of $41,000,000. The state of Illinois has, within its borders, nearly one million acres of swamp lands, which it would cost $14,000,000 to reclaim. When finally reclaimed, however, there would be added to the present value of these lands the sum of $20,500,000, aside from repaying all the cost of reclamation. Illinois, it must be remembered, already raises more corn than any other state in the union and the lands to be reclaimed would be more productive than any acres now in corn, because of the rich alluvial deposits which have been accumulating for unnumbered years. What this soil would accomplish for the grain belt as a whole puts the wildest dream of Beriah Sellers to the blush, for while Illinois with a million acres of reclaimed swamp lands would find itself twenty million dollars better off, Michigan, Wisconsin, Iowa and Minnesota have approximately 12,000,000 acres of swamp and overflow lands, which at the Illinois ratio, would mean something like $250,000,000 at stake, waiting for the dredge, the canal and drain tile to add wealth beyond the dreams of avarice to states already rich beyond the imagination of Croesus.

Because the work of reclaiming these vast areas is in progress is one of the reasons why economists predict the day when the grain belt will have practically doubled its production.

A 100-ton kiln, additions to the fitting department and a trolley line to the dock are new improvements at the plant of the Federal Terra Cotta Co., Perth Amboy, N. J.

Dry Land Machine, also Used on Open Ditch and Levee Work.

Floating Dredge Often Used on Open Ditches and Levees.

STUCCO NOT DURABLE.

There is considerable discussion being carried on among home owners and builders as to the durability of stucco houses. A writer in the "Chicago Evening News" has the following to say in answer to an inquiry along this line:

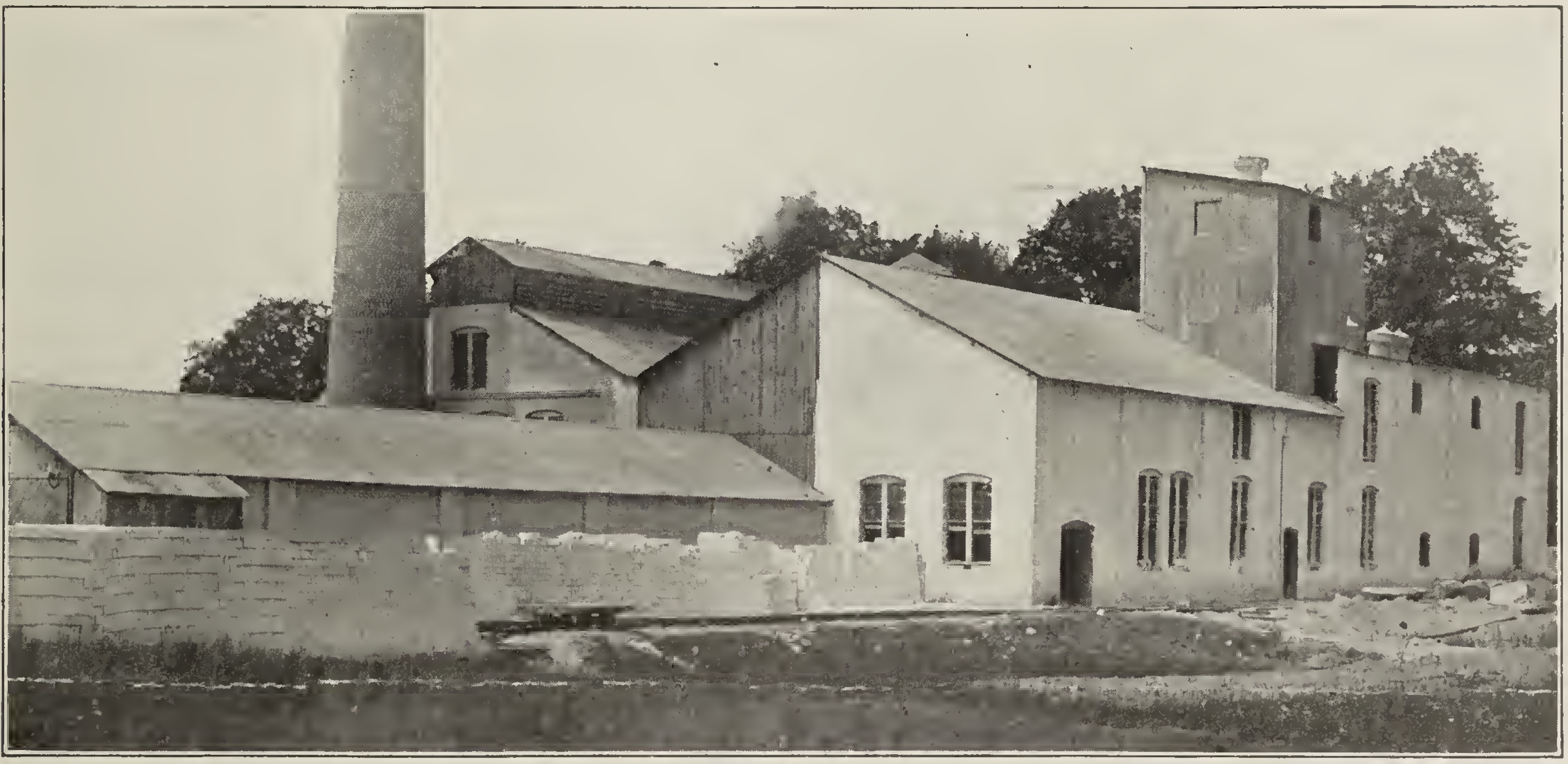
"Many modern stucco houses are not as durable as brick or stone, for the reason that the mixing may be improperly done, and any settling or shrinking of the building will expose the metal lath and naturally rust it. Again in a great many cases the house becomes damp from rain. This is unhealthful, and the effect is to decay or rot the wood on which the stucco is fastened. The most substantial residence or dwelling house I have found is a brick veneer. If common brick is used, with stone sills and lintels it will be found to be just as cheap as, or cheaper than, stucco and at the same time will not be damp inside, will never need waterproofing, and if somebody kicks into it there won't be a hole. The wall of a brick veneer is composed first one brick flat, then one sheet tar paper, wood, two by four scantling and finally the inside plaster."

A NEW ENGLAND SAND-LIME PLANT.

Rotary Press Turns Out Fine Product at Indian Orchard Establishment—Process Described.

The accompanying illustrations show the plant of the New England Co., located near Unionville, Conn. One view shows the extensive sand pit with crew of Italian laborers. This picture was taken just after an order for 300,000 buff face brick was completed, which accounts for the empty barrels, which formerly held the coloring matter, used in tinting the brick.

Until 1911 there were no sand lime brick plants in the New England states but the proverbial conservatism of the Puritan farmer and the Cape Cod fisherman finally gave way to the true spirit of Yankee enterprise and during August, 1911, the first New England sand lime plant was placed in operation at Indian Orchard, near Springfield, Mass. During the winter months of 1911 the plant of the New England Brick Co. was completed and soon another plant will be begun in Worcester, Mass., while a fourth one, to be built by the same concern, will be established in Boston.



Portion of the Sand-Lime Brick Plant of the New England Brick Co., Unionville, Conn.

The plant of the New England Brick Co. is near Hartford on the N. Y., N. H. & Hartford Railway and also near the Hartford-Farmington-Unionville Interurban line, where the company purchased a tract of 160 acres of land covered with deposits of the very best sand available for the purpose of making sand lime brick. This was poor farm land, although used as such, but as everything has a bright side, the sand on this barren land is being turned into gold by the sand lime process.

The first brick which the company made were used for walling in the steel skeleton factory building. As shown in the picture, the result is a fine looking plant which is a permanent advertisement of its product.

The works is equipped with a 250-h. p. engine, two 150-h. p. tubular boilers, two 70-ft. hardening cylinders, one tube mill, gyratory, lime crusher, two eight-mold rotary presses and one four-mold vertical press, also necessary elevating and conveying machinery. A hand press is used for making special shaped brick. The sand is brought to the plant in dump cars but the company expects soon to put in a power driven scraper and excavator.

The brick made by the concern have become quite popular in the Hartford vicinity and are said to be hard as steel, white as snow and smooth as glass and they find a ready market throughout the New England states.

Besides the standard size, the concern turns out a buff and pink Roman brick, 4 x 12 x 1½ in. in size, which is very much in demand and brings fancy prices. The greater part of the brick is shipped by rail but the company has several auto trucks, which are kept busy making deliveries to nearby places. The autos are equipped with platform and rails and hold three cars of brick taken direct from the hardening cylinder.

A sales office is maintained by the company in Hartford, F. E. Hage being the sales manager. The works are superintended by C. E. Carlson, assisted by F. K. Loch. Both gentlemen are engineers who were educated in the business in Sweden and have spent the last sixteen years continuously in the sand lime brick business. They say: "We are brick makers and have been since 1897 and are proud of our profession. Before coming to this country we put up plants of all kinds throughout Scandinavia, Germany, Belgium and Holland and have since 1902 been engaged in the same business in the United States. We are well aware that it is possible to make a fairly good sand lime brick with most processes and with most makes of machinery, as we have installed all types and gone through the struggles incident to the introduction of sand lime brick and we must confess that we have made, at times, some mighty poor brick, having at times been forced to use outfits unsuitable to prevailing conditions at certain plants, but when it comes to making a first-class silica face brick which commands the best price, we insist upon having the American-made rotary presses, a tube mill of large capacity and the division silo system.

Showing Switches to Sand Bank—Note Empty Color Barrels at Left.

The New England Brick Co. foresightedly equippel its plant with first-class machinery and the brick are made under the silo and division system. To this may be attributed the fact that the company has met with few of the difficulties often encountered in new enterprises of the kind.

The brick made by the New England Brick Co. have a market value of from $10.50 to $18.00 per thousand and upwards, depending on color, size and shape of brick.

The many improvements to its property, which are contemplated by the company include the erection of two-family houses near the plant for the use of workmen, a residence for the superintendent and an office building. The prospects for the future development and enlargement of the business are said to be of the highest character and it is the aim of the concern to build an establishment which will equal, if not excel, the splendid plant of Guttmann Bros., at Berlin, Germany. The company feels, however, that the American-made brick have long ago beaten the European brick to a "frazzle."

SAND LIME BRICK FOR POST OFFICE.

English Brickmaker Turns Out High Grade Brick for Government Building.

Through the courtesy of H. J. Daniels, of the Washington Silicate Brick Co., Terra Cotta, Washington, D. C., we received two fine samples of the high quality sand-lime brick which the company is making for a sub-post-office building in Washington.

Mr. Daniels, who is superintendent of the plant, has spent a lifetime in the business, having grown up in the service of Smeed, Dean & Co., Sittingbourne, Kent, England, who own one of the largest sand-lime plants in the world with an annual output of 70 to 80 million. He began work as an off-bearer, when 10 years old, attending school half a day and making brick the remainder of the day. At that time, Mr. Daniels states, all the brick were hand made, and known by the name of "sand stock," and were the standard building brick of London.

The plant of the Washington Silicate Brick Co. is an up-to-date establishment, equipped by the American Clay Machinery Co. with a complete line of machinery including two 8-mold rotary presses, two wet pans and two 72-ft. hardening cylinders. In a recent communication from the company, the merits of the "Built Right, Run Right" line of machinery were extolled unstintingly, which, coming unsolicited, was a testimonial worth while.

NEWS OF THE SAND-LIME INDUSTRY.

Prosperous Indications Noted—Good Demand in Canada —New Plant to be Built.

William Toepser has purchased the sand-lime brick plant at West Bend, Wis., and reorganized it under the name of the Acme Brick & Sand Co. The plant will start soon, with Wm. Moddus, an experienced sand-lime brick manufacturer, as superintendent.

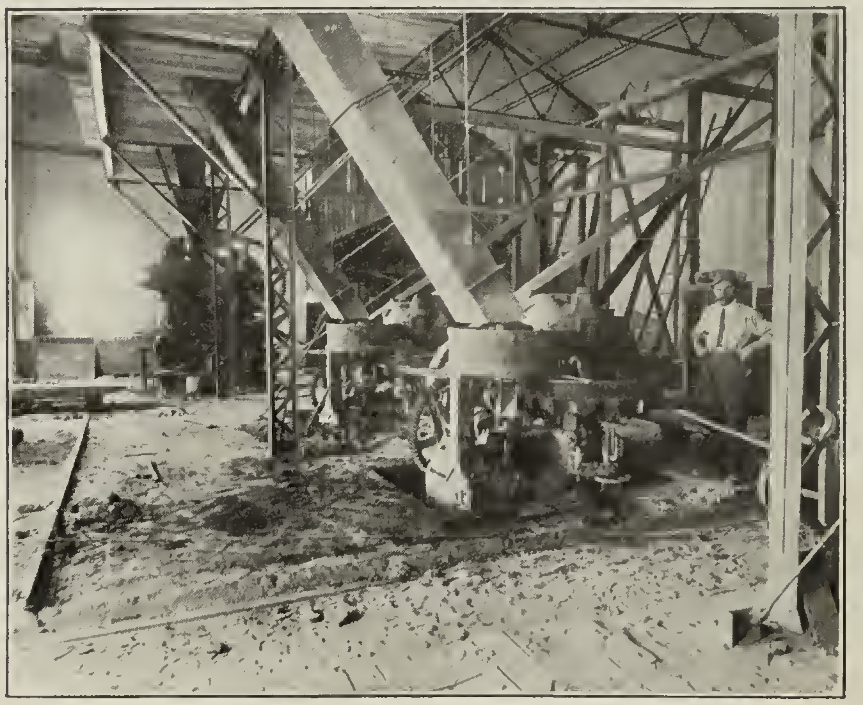
The Church Brick Co., Sibley, Mich., states that it is having one of the most prosperous years in the history of the company. The plant is working overtime, and still the demand is in excess of the supply. There are no brick on the yard, and they are two or three weeks behind on orders.

The Toronto (Ont.) Brick Co. reports that they have no stock on hand and have orders for a million brick to be delivered.

The Buffalo (N. Y.) Sandstone Brick Co. reports sales of over half a million brick to Canada, where there seems to be a strong demand for sand-lime brick.

Deliveries are being made by the Rochester (N. Y.) Composite Brick Co., of several million brick for the large N. Y. C. R. R. station, now under construction in Rochester, N. Y.

The Alsip Sandstone Brick Co., Ltd., Winnipeg, Manitoba, has acquired the rights to use the Komnick system in the production of brick. This system is being used to great advantage in Germany, eastern Canada and the United States. The machinery used is said to be the latest and best in the country, and the plant has a capacity of 88,000 brick daily.



Upright Presses at the New England Plant.

The Champlain Brick Co., of Mechanicsville, N. Y., elected the following officers: President and superintendent of yard, J. F. Norman; vice-president, G. T. Griffin; secretary and treasurer, C. E. Hoskins.

SANITARY POTTERY PLANTS SHOW ROOM

Draw Workmen from Domestic Makers and Cause Labor Scarcity—Many New Creations Placed on Market

NEVER in the history of the sanitary pottery trade have so many pottery workers left the domestic branch of the trade to enter an opposition line. In the last few years, so it seems, wonderful strides have been made in the creating of new business for sanitary potteries, with the result that the manufacturers have found it impossible to get enough workmen from their own ranks to fill new positions.

Within the last few months, a new sanitary pottery has been started at Richmond, Cal., which is the first plant of the kind to be built west of the Rocky Mountains. Workmen for this plant were drawn from the domestic ware potteries in East Liverpool, O., and Trenton, N. J.

In fact, the sanitary pottery manufacturers recently sent out a call for sanitary ware pressers, and since May 1, nearly fifty pottery pressers have left the domestic potteries at East Liverpool to go into the sanitary shops. And, the end is not yet.

Throughout the United States, there is not an idle sanitary pottery. On the other hand there are several inactive general ware potteries. The great advance made in the general use of sanitary ware and the action of the plumbers and plumbing supply houses and contractors in pushing the products of the sanitary ware plants has created a mountain of new business.

While Trenton, N. J., leads in the production of sanitary ware, the volume of business is gradually increasing in the western plants. In the West Virginia district, with Wheeling as a center, the capacity of sanitary plants has increased to an alarming extent. At Mannington and Cameron, W. Va., former general ware potteries have been converted into the manufacturing of sanitary ware.

At Columbus, O., the former plant of the Bell Pottery Co., has been transformed into a sanitary pottery, this plant being under the management of E. T. Swetman, formerly of Trenton, N. J., and acting for the Sanitary Earthenware Specialty Co.

A new plant has been built at Evansville, Ind., during the last year for the manufacturing of sanitary ware, and the two plants are working to capacity.

Now comes East Liverpool, O., to the front, and the Chamber of Commerce of that city is seeking the location of a sanitary plant there—the first to be established in that district. Inasmuch as the wages of sanitary ware pressers range from $27 to $36 per week, a Trenton sanitary pottery manufacturer has made overtures to start the manufacture of sanitary pottery there—in one of the inactive plants.

Year by year, the use of sanitary pottery is increasing. The production of sanitary pottery for 1910, according to Federal statistics shows a remarkable increase over 1909, and the 1911 statistics, which will soon be ready, will show an equally large increase over 1910.

In the past the private home has always been "beautified" by the appearance of a handsome toilet set, but the domestic pottery manufacturers admit that the sale of this line is growing less annually, and in its place sanitary pottery and specialties are being used.

So many new creations in sanitary pottery have been placed on the market during the last few years, principally by the Wheeling and Trenton sanitary potteries, that the production is bound to increase as the years roll by.

Pottery workers also appear to hold the view that work in the sanitary potteries is very steady, and reports from the different plants for weeks past show that they "have never lost a kiln," which means steady employment and at good wages.

There is very little sanitary pottery imported into the United States, but on the other hand, the exports are growing rapidly. The Trenton plants are doing the bulk of the export business, although it is the belief that the new plant at Richmond, Cal., will soon go after the Oriental trade, which is not being worked extensively except by the European sanitary potteries.

SHOWS MOTOR TRUCK OPERATION COST.

Table Gives Actual Figures and Proves Saving of One-Third Over Horse-Driven Wagon.

A considerable number of truck manufacturers who have been in business for ten years or more have had so many of their machines in different trades and widely separated localities that they have been able to collect a great volume of cost records and from these to calculate averages and tabulate them in an easily available form. One such company, and a real pioneer in the commercial vehicle field, has compiled a table of average costs of operation of its principal sizes of gasoline trucks covering a period of seven years of active service. This table shows that a daily cost of a two-ton truck that averages seventy miles a day is $10.60; that of a three-ton machine averaging sixty-two miles a day, $12.20; of a four-ton truck averaging fifty-five miles a day, $13.80, and of a five-ton truck averaging fifty miles a day, $15.

Another long established company has compiled a similar cost table covering a period of more than six years. This shows the average daily cost of running a one-ton wagon to be $8.07, of a two-ton truck $10.25, a three-ton truck $11.30, five-ton truck $14.80, seven-ton truck $16.45 and of a ten-ton truck $18.50 a day.

The figures given for the trucks of one to ten tons capacity include all items properly chargeable to the hauling service, both actual running expenses and overhead. Drivers' wages are figured at $16 to $22 per week; gasoline at 12 cents a gallon; oil at 30 cents; garage at $225 to $300 a year; tires at $275 for a one-ton machine to $1,650 for a ten-ton truck; overhauling and general repairing at $300 to $550; depreciation at 15 per cent; interest at 5 per cent, and fire and liability insurance at $150 to $240 per annum.

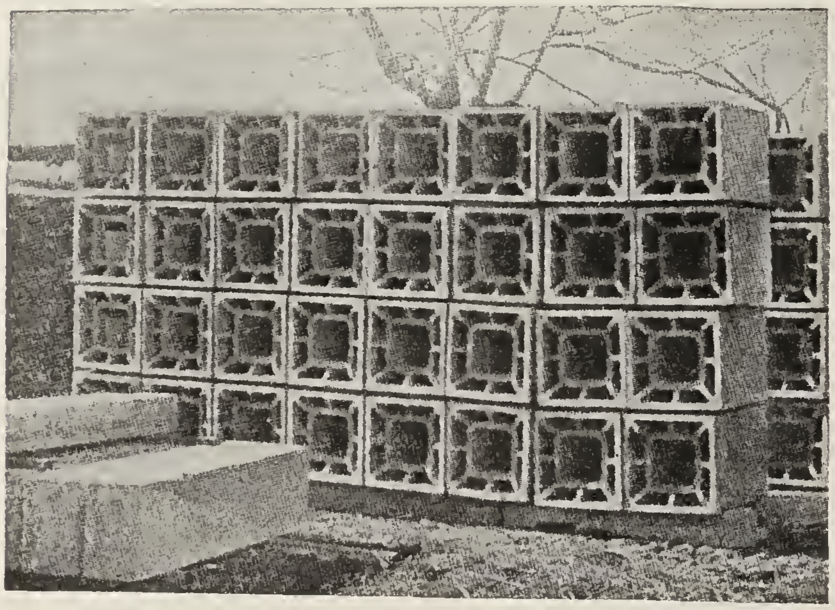
One of the makers of electric commercial vehicles furnishes a table of general average operating costs for the three models which it manufactures. Fixed charges on the delivery wagon amount to $303 a year for interest and depreciation on non-wearing parts; maintenance for maximum service to $389.50 a year, and garaging, including charging current to $108. This amounts to $800.50 a year, or $2.66 per working day, not including driver's wages. At $15 a week, wages would bring the total daily cost to $5.16. On the same basis the total cost of running the light truck is $5.63 a day and that of running the heavy truck $6.91 a day. Larger and heavier makes of electric trucks cost from $7 to $8 a day to operate.

According to the testimony of large business houses it costs from $6 to $6.50 a day to keep a wagon and team of horses at work, but the motor truck does the work of three such outfits, and effects a saving in operation of 33⅓ per cent. Figured in cost per ton mile, the gasoline motor vehicle shows an efficiency of 175 to 200 per cent., as compared with horses.

USES WASTE BRICK IN CHIMNEYS.

German Invention Gives Clay Plants Opportunity to Utilize it to Profit.

What use to make of the waste material of the brick yard is a problem that has confronted the clayworker for many a year. Imperfect brick and other waste products from the kiln accumulate. The brickmaker finds an uncertain and unprofitable market with his enemy the cement man, who utilizes this waste product as grout in road construction or other work. Some, finding no market at all, fill up the abandoned clay pit hole with it. Others leave the waste to accumulate until it reaches the significance of a miniature mountain in one corner of the yard.



Schofer Chimney Block Ready for Shipment.

Scarcely a year ago a German by the name of Schofer invented a chimney of peculiar construction designed to be used in private residences, hotels, theaters and other public buildings. Experiments with various materials proved that burned clay was the cheapest and, at the same time, the best material to use in making this chimney. Burned clay not only had the advantage of being stronger than concrete but also had the advantage of being absolutely fire proof.

The new chimney became an instant success in Germany and in every European country where it was introduced. The brick manufacturers seized upon the idea as a good one and found the manufacture a most profitable one, as, in this way, they could use their waste material, turning what had been a dead loss to them into money.

The chimney is of special construction, differing from anything that ever has been offered in chimney building. However, it is easily made. The brick waste is crushed and mixed with cement for binding purposes. This material is formed into the chimney block and allowed to dry.

One of the good features of the chimney is that it can be made during off seasons when the brick plant is closed down, and a profitable auxiliary business can be worked up among local contractors and builders. The chimney appeals especially to the builder as it is easily constructed.

The Schofer invention has for its object a chimney which, without any mechanical auxiliary appliances, effects the removal of the smoke simultaneously with the airing of the houses, through separately provided channels adapted to mutually increase their working capacity.

Dwellings, schools and hospitals are almost without exception deficient in ventilation, being destitute of an automatic, powerful, practical and inexpensive airing appliance. With badly drawing house chimneys and with the centrally arranged hot water and steam heating appliances that are almost exclusively used in America this deficiency is even considerably accentuated through more energetic development of dry heat which means uncomfortable and insanitary condition.

The principle involved in the new Schofer chimneys is embodied in a smoke chimney with airing shafts provided around the same and being so arranged as to produce insulation. The new chimney is composed of a number of superposed and independently finished pieces made in any suitable length or height so that the put-up chimney has only horizontal joints without any vertical joints whatsoever.

The Schofer idea seems to be a good one and the brick and clay product manufacturers interested can get full particulars of Dr. Otto Schott, Fifth Avenue, Building, New York City, who is the American representative of Schofer.

URGES BRICKMAKERS TO AID ASSOCIATION.

Brick Builders Organization Opens Campaign for Larger Membership and More Liberal Support.

The Brick Builders' Association, in keeping with the policy outlined in the editorial in this issue of "Brick and Clay Record," has inaugurated a campaign for an increased membership and appeals to those in the industry to join the organization and give it liberal support through a full page announcement which appears on Page 25 of the advertising section of this issue.

The Brick Builders' Association is one of the strongest organizations in the field and under the guiding hand of J. Parker B. Fiske, the secretary, is doing a great work in advancing the interests of the manufacturers of building brick, and the high class literature distributed by the association has done much to popularize brick.

"Brick and Clay Record" urges every brick maker to read the advertisement and not to stop at that but to sit down and write Mr. Fiske and get in touch with him. The organization needs you and you need it.

DUNN CLOSES TWO BIG DEALS.

Enrolls Metropolitan Brick Co. and the Bessemer Limestone Co. Among Those Using His Patent.

The Dunn Wire-Cut-Lug Brick Co., of Conneaut, Ohio, closed two big deals a few days ago for the rights to make its patent wire-cut-lug bricks. The Metropolitan Paving Co., of Canton, with a capacity of 100,000,000 per year, and the Bessemer Limestone Co., of Youngstown, Ohio, with an annual capacity of 40,000,000 are the two concerns mentioned.

These two plants, among the largest of the paving brick factories in the country, brings the number of those making brick under the Dunn license up to twenty-three.

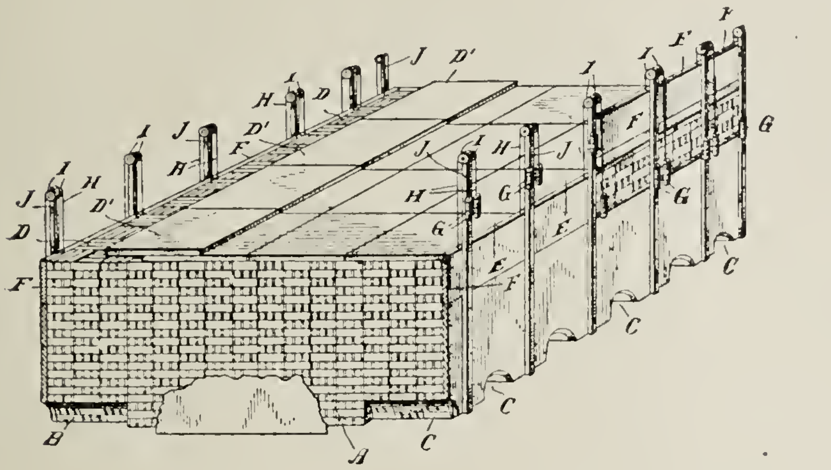
"Antiquarian research brings forth the fact that twenty years ago cedar block pavements were declared to be the 'very best for general use.' Acting on that belief, Chicago wasted several million dollars," says the "Chicago Tribune," and yet the city fathers are expending more millions of the taxpayers' good money for creosote block, which are unanimously voted a nuisance and a constant source of annoyance.

RECENT INVENTIONS of CLAY MACHINERY

Up-to-date Time and Labor-Saving Devices Reduce Cost of Producing Burned Clay Building Materials

1,033,138. METHOD OF OPERATING BRICK-KILNS. Edwin L. Wiles, Stony Point, N. Y. Filed Oct. 7, 1911. Serial No. 653,299. (Cl. 25—157.)

The method of burning brick consisting in piling the brick in a low comparatively wide pile, the brick being positioned so as to leave interstices between them to allow for the passage of the heated gases, applying heat to the bottom of one side of the pile and directing the heat so as to flow in a diagonal path through the pile toward the top of the opposite side, then applying heat to the bottom of said opposite side and directing the heat so as to flow through the pile to the top of said first side.



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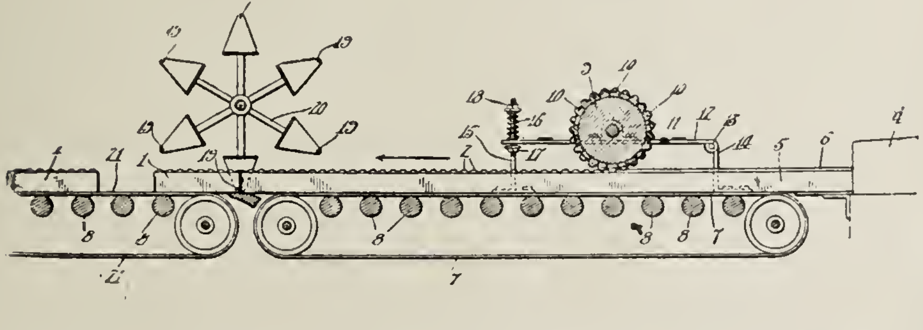
1,004,406. BRICKMAKING-MACHINE. Charles H. Frost, Pasadena, Cal., assignor to Los Angeles Pressed Brick Co., a corporation of California. Filed Sept. 10, 1907. Serial No. 392,226.

In a brick machine, means for forming a bar of plastic material with parallel ridges upon one side at a distance apart, a ribbed wheel journaled with its axis above and at right angles to the movement of said bar and its ribs adapted to engage with and indent said ridges even with the top of the bar, and means for severing the bar into lengths transversely of said ridges.

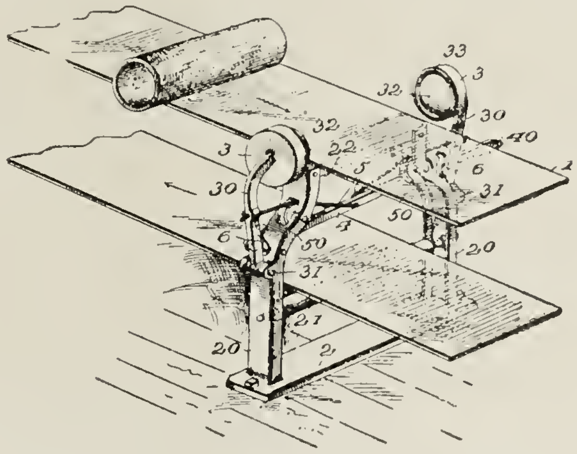


In a brick machine, means for forming a rectangular block of plastic material having a plurality of longitudinal ridges upon one side, and means for forming each of said ridges into a plurality of projections subsequent to the formation of the ridges.

1,001,945. DEVICE FOR FINISHING THE ENDS OF DRAIN-TILES AND THE LIKE. George Elmer Goldner, Fort Dodge, Iowa. Filed Feb. 4, 1911. Serial No. 606,624.

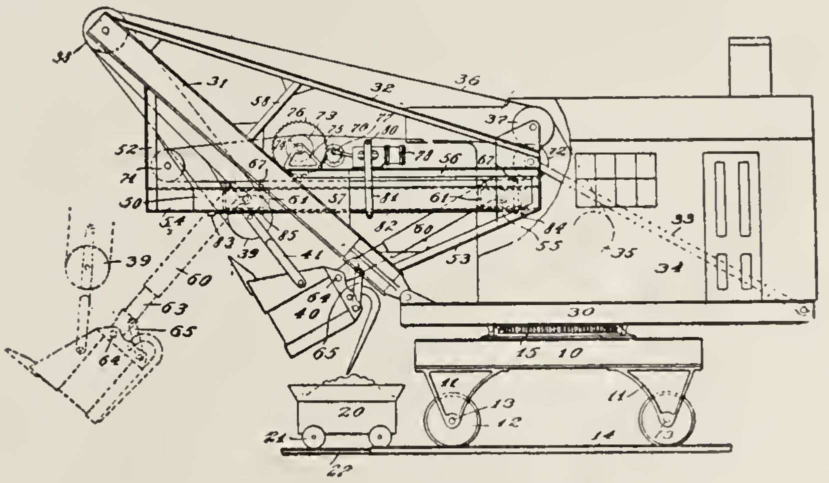
A machine for dressing the ends of green cut drain tiles, and the like, comprising a pair of opposing tile end finishing dies, for centering and grasping a die therebetween, a tile conveyor for carrying tiles to and from said tile grasping dies and operating mechanism for simultaneously moving said dies toward each other to grip the ends of a tile and press the same between the dies.

A pair of tile-end finishing opposing pressure dies formed to grip and press a tile therebetween, said dies having cup-like faces to receive and press the end edges of hollow tiles and center the same therein, in combination with manually actuated operating means for simultaneously and oppositely moving said dies and applying tile gripping pressure thereto, and a tile conveyor for carrying tiles to and from said dies, said conveyor traveling below said dies, whereby the dies can grip a tile resting transversely on the conveyor.



1,000,263. EXCAVATING MECHANISM. Hollis H. Harris, Lorain, Ohio, assignor to The Thew Manufacturing Co., Lorain, Ohio, a corporation of Ohio. Filed Jan. 31, 1911. Serial No. 605,813.

In an excavating apparatus, the combination, with a scoop and its operating mechanism, of a wheeled truck for supporting such parts, said truck having its opposed wheels carried on independent axles whereby a clear space is provided beneath the truck, a cart of narrower gage than the truck adapted to pass beneath it, and two railed trackways, one within the other, on which the wheels of the cart and truck ride respectively.



In an excavating apparatus, the combination of a supporting structure, a boom connected therewith at its lower end, a horizontal trackway secured to the boom, braces leading upwardly from the forward end of the trackway to the boom and diagonally downwardly from the rear end of the trackway to the boom, the trackway extending inwardly beyond the lower end of the boom, a scoop, and a scoop arm connected with the scoop and having its upper end guided on such horizontal trackway.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

George C. Zeller, formerly a well known clay worker of Philadelphia, recently formed a partnership with William Graham under the firm name of White Elephant Brick Works, at Fieldsboro, N. J., and burned the first kiln Aug. 17 with unusual success. They write that the brick business in New Jersey is booming and that they had to refuse some large orders because of the lateness in getting their plant started. Mr. Graham was formerly manager for S. Graham & Co. of Fieldsboro and, like Mr. Zeller, is a practical brick maker.

Joe McGinnis was much disappointed, Friday evening, on going to the barn which he is erecting, to find the ten-foot cement wall which is to compose the basement had caved in, making it necessary to do the work over. —Savanna (Ill.) Times.

Hugh Hatch of Camden, N. J., sells all the brick he makes at that place, sixty employes being kept busy.

Walter Reece, late general sales agent of the Sawyer Belting Co., and more recently looking after the belt department of the Chicago Rubber Co., Chicago distributors of the Sawyer products, has associated himself with the Hettrick Bros. Co., makers of belting at Toledo, Ohio. He is the general representative of the concern and manager of the engineering department.

Work has commenced on the Youngren kiln at the brick plant of the Adamantine Clay Products Co., at North Mountain, W. Va.

The Farmington Brick & Tile Company, of Farmington, Ia., has added a new Swift down draft kiln to its plant, with a capacity of 60,000 brick.

M. F. Rushfeldt, of Albert Lea, Minn., who is interested in a large brick factory near Duluth, Minn., visited there recently and found that the plant is overwhelmed with orders and that it is doing a big business, the daily output being about 100,000 brick, all of the best quality.

H. A. Nelson of the Albert Lea, Minn., Brick & Tile plant is on a trip up through the northwestern part of Minnesota, taking in the Red River valley and other points.

The plant of Webster City, Iowa's new sewer pipe factory is progressing rapidly. The new company is known as the National Sewer Pipe Co.

A concrete bridge over Dry Creek, near Florence, Colo., gave away during a rain storm Aug. 16 and several persons who were standing on it watching the flood, had a narrow escape.

The Palestine Brick Co., of Palestine, Texas, is owned and run by colored people.

Contracts were awarded Aug. 18 at Palestine, Tex., for twenty and one-half miles of road building.

The Athens (Tex.) Fire Brick Co. has doubled its day force and added a night shift to take care of an increased demand.

The American Fire Brick Co., of Mica, Wash., has installed a gas plant which takes the place of coal in their brick and sewer pipe plant.

After having prohibited the establishing of new brick plants in Omaha for the past two years, the city is letting down the bars, the only restriction being that no chimneys shall be built less than 100 ft. high.

It is said that the increasing price of lumber has brought about an unusual demand for brick at Omaha, and the growing popularity of fireproof building construction there, calls for 120,000,000 brick a year. The existing yards, at Omaha, have only a capacity of 60,000,000 brick a year so that the remaining brick must be brought from other states at high freight rates—so high, in fact, as to practically prohibit Kansas brick being used.

The new plant of the Standard Brick & Tile Co., at San Bernardino, Cal., will soon be ready to begin operation. Offices will be opened in the Anderson Building, with E. F. Van Lugen as secretary and manager.

NEW PLANTS AND ADDITIONS.

J. L. Gelnett, a farmer at Thompsontown, Pa., writes that he wants a small plant for the manufacture of drain tile for himself and his neighbors. He might also be interested in a small brick plant, as he says his clay tests well for brick.

S. E. Vance of The Crookston (N. D.) Brick & Tile Co., is contemplating the purchase of the Moorehead Brick Co., of Moorehead, N. D.

A. G. Brennick of Mason City, Ia., is interesting business men at Lemmon, S. D., in a $50,000 brick plant which he proposes to erect there.

The plant of the Marshalltown (Iowa) Sewer Pipe and Tile Co. will be enlarged at a cost of $2,200.

The Arkansas Brick Mfg. Co., of Little Rock, Ark., has increased its capital stock from $100,000 to $150,000 for the purpose of increasing its equipment.

At Brockton, Mass., land in the north end of Brockton has been purchased by William P. Webber, of Rochester, N. Y., and a large brick factory, modern in every respect and having a floor space of about 70,000, will be erected.

A charter has been issued the Balden Brick & Tile Co., of Elizabethtown, Balden county, capital of $50,000 authorized, of which $1,000 is subscribed by Alex. Newton, J. Sprunt Newton and others.

With a capital stock of $5,000 the United Brick & Clay Products Co. has been formed by interests at Philadelphia, Pa.

The Good Clay & Coal Co. has just been formed at Patton, Pa., with a capital stock of $10,000.

An application was made at Harrisburg, Pa., Aug. 28, for a charter for the Cambria Clay Manufacturing Co., by S. M. Hoyer, N. H. Ganz and M. L. Kring. The company will have its main offices at Altoona, Pa. Mr. Hoyer is the mayor of Altoona.

A new clay manufacturing plant is to be started at St. Mary's, Pa., under the name of the Fireproofing Co. The work of clearing the ground for the preliminary construction work has just been started.

The Indiana Brick Co., of Anderson, Ind., whose plant was recently destroyed by fire, is preparing to clear away the wreckage with the view of moving to another site. The company has not decided on the new location. Shreveport, La., offers a bonus of $30,000 and fifty acres of clay for it to move there, but despite this attractive offer the concern may stay in Anderson.

The Black Hawk Clay Mfg. Co., of Sears, Ill., has increased its capital stock from $100,000 to $400,000.

Joseph, Evelyn and M. E. Field have incorporated as the Fairmount Brick & Tile Co., of Eugene, Ore., with a capital stock of $5,000.

F. J. Harkenrider of Estacada, Ore., has discovered a fine bed of pottery clay on his farm and is having it analyzed with the view of starting a plant.

G. W. Lenkerd, manager of the Clymer Brick & Fire Clay Co., Indiana, Pa., writes that he wants a first class brickmaker.

James P. Jensen, Jr., Box 17, Sandy, Utah, wants to buy a second-hand brick press, Boyd preferred.

The Modern Tiling & Manufacturing Co., of Knoxville, Tenn., is the name of a recently organized company which proposes to make tile and other clay products. A. S. J. Davis is the president. The capital stock is $100,000 and the plant is to be located at Smithwood, Tenn.

W. B. Frazier and others have organized the Frazier Brick Co., of Ginger, Rains county, Tex., with a capital stock of $50,000. The company will maintain a branch office at Dallas, Tex.

The Fultonham Brick Co., of Fultonham, O., has been purchased by F. H. Kirchner, of Cincinnati, and will be reopened after the necessary repairs and improvements have been made. A new motor will be installed to carry the clay from the banks to the plants.

W. E. McCullough, of New Albany, and W. F. Chatman, of Owensboro, Ky., have bought the farm property of T. B. Walker, a banker near Paris, Tenn., and will organize a stock company to manufacture pottery there.

The Koch-Piety Co. was recently organized with a capital of $10,000 at Bicknell, Ind., to manufacture and sell brick, tile, etc. The organizers are: C. W. Koch and F. J. Piety.

The C. W. Stine Pottery Co., White Cottage, O., has increased its capitalization from $10,000 to $40,000.

John W. Welch, of Welch Bros., Detroit, Mich., has purchased a tract of land on which he proposes to build a brick plant.

Austin Gallagher, industrial commissioner for the Western Maryland railroad, is impressed with the clay deposits along the Connelsville-Cumberland division and thinks there is an excellent opening there for the establishment of a brick plant.

With a capital stock of $25,000, the Davis Mantel & Tile Co., has been incorporated at Dayton, Ohio. The concern is the outgrowth of the old Davis Mantel & Grate Co., which for twenty years occupied the present site at 208-210 Main street. The incorporators are: James K. Davis, Frank M. Davidson, J. C. Taylor and H. H. Pugh.

C. P. Hancock, operating a brick plant at Riverside, Calif., closes down his plant this week for the season, having exhausted his clay supply. He will move his plant to another location.

The Manson Tile Plant, of Davenport, Iowa, which has been out of business the past year, has been purchased by S. W. Gawthron of Chicago, who is putting it in shape to resume business.

F. X. Fryder and M. C. Bridenstein have incorporated their brick and tile business at Kalona, Ia., under the name of Kalona Clay Co. The corporation is capitalized at $70,000, with F. X. Fryder of Iowa City as president and M. C. Bridenstein of Kalona, as vice-president.

The site has been selected for the Pottery Manufacturing Co. of Paris, Tenn., and buildings will be constructed in the near future. This company will employ at least from seventy-five to 100 men.

Lonyo Bros., brick manufacturers of Springwells, Mich., has filed articles of incorporation. Albert, Mary A. and Jane Lonvo were named as the shareholders and the firm was incorporated at $15,000, entirely paid in.

A charter has been granted the Bladen Brick and Tile Company, of Elizabethtown, Bladen county, Va. A capital of $50,000 is authorized, and $1,000 was subscribed by Alex Newton, J. Sprunt Newton and others.

The Neepawa Brick Co., of Neepawa, Can., is swamped with orders and a local paper bemoans the fact that someone does not awaken to the opportunities presented for more brick plants there.

The Coffeyville, Kans., Shale Brick Co. is installing a $17,000 oil-burning system.

The Denison Clay Co., of Coffeyville, Kan., is doubling its capacity.

OHIO.

Columbus, O., Aug. 31.—Possibly ere this is being read, the reader will have heard the result of the special election held in Ohio, Sept. 3, when a vote was taken on proposed amendments to the State constitution. It has been an all absorbing topic among the building supply people and brick manufacturers during the past fortnight, and especially since the real purpose of "Proposition No. 9," "Mechanical and Builders' Liens," has become known.

Article 2, section 33, of the Ohio Constitution amendment reads:

"Laws may be passed to secure to mechanics, artisans, laborers, subcontractors and material men their just dues by direct lien upon the property, upon which they have bestowed labor or for which they have furnished material. No other provision of the constitution shall impair or limit this power."

The Constitutional Convention in passing this proposed amendment declared:

"This amendment is necessary to permit laws to be passed securing to laborers, mechanics and subcontractors their wages for work done, to material men the amount justly due them for material furnished. It is the prevailing opinion that under decisions of the supreme court of this state the general assembly has not the power at present to pass a mechanics' lien law which will furnish adequate protection for the persons named above."

The discussion of this amendment is given as follows:

"Under existing law, Sections 8308, 8316 and 8324, of the General Code, the owner is relieved from liability upon making full payment to the principal contractor, who is responsible to all sub-contractors, labor, and persons furnishing material. Under this proposition, the owner is not relieved until all labor and material are paid for by the principal contractor, even though the owner has fully paid the principal contractor for all such labor and material. Inasmuch as the principal contractor is the employer of all labor and buyer of all material, the owner has no means of knowing when all debts have been paid, and should not be held responsible for them.

"This proposition will also make the owner liable for all labor and material required in excess of contract caused by negligence of principal contractor.

"It is clearly unwise to attach an unlimited liability to owners of property for debts they do not contract and of which they can have no direct knowledge."

The Columbus Brick & Terra Cotta Co. is developing a new oil territory in Hocking county. The company is said to have started operations in a rich territory, which is surrounded by good producing wells of both oil and gas.

After a brief idleness the plants of the Hocking Valley Brick Co. have resumed operations. Orders are good and a steady run is expected by the management.

The Chardon Brick & Tile Co., at Chardon, O., has just completed the construction of a large kiln, which will be used for burning drain tile.

After going through the receivership and sale route, the plant of the Fultonham Brick Co. has resumed operations at Fultonham, under the name of the Kirchner Construction Co. The property was recently purchased by F. H. Kirchner, of Cincinnati.

Offices of the Petersburg Fire Brick & Tile Co., at Ironton, O., have been closed, and the company is doing all its business for the general offices at Coal Grove, near Ironton. John Peters continues in charge of the general offices at that place.

Operations have been resumed in full at the plant of the East Liverpool (O.) Brick Manufacturing Co., under the management of Harry Horwell. While a red face brick is now being manufactured, it is planned to make a cream and white face brick, from a vein of clay which is now being developed. The first trial kiln of the new product proved satisfactory to builders. The company contemplates opening a general sales office in Pittsburgh before the fall season ends.

O. E. Gilmore, of Uhrichsville, went to Mineral City and placed an order for "Sparta" face brick, which he will use exclusively in the construction of a new business block in Uhrichsville.

At Findlay, the Findlay Red Brick Co. plans the erection of a new brick plant with a daily capacity of 30,000 brick. The company is composed of Wilbur Ewing, David Kirk, Jr., and E. Jackson. The organization of the company was only recently completed.

Contracts have been awarded the Cincinnati Clay Products Co., of Cincinnati, by the Thomson-Starrett Construction Co., of New York and Chicago, for the supplying of about 1,200 hollow metal doors and "trim" for the new building which the Central Life Insurance Co. is erecting in Cincinnati.

CHICAGO.

Chicago, August 27.—The present summer's activities will make a new record for building in the "Windy City," and there will in all probability be a new fall record as well, if the present outlook is any indication. There has been no appreciable decline in the construction activities this summer, which is remarkable. This year has proven the exception to the usual midsummer dullness and there has been so much of a rush that only a few of the supply men and their employes have been able to get away on their annual vacations.

The activity referred to is general. Every possible kind of structures is being erected, and this has been made possible, at least to some degree, by a greater number of people investing their money in paying real estate rather than permitting it to remain in trust, where there is less to be realized, and where there is also more danger from panic and kindred unfavorable calamities.

There has been an increased demand for materials that are fire resisting, and we see the result of much activity on the part of the progressive clay men who have been causing an awakening in the minds of the building people. The advertising that has been given to clay products in the past year has resulted in a general feeling that there is wisdom in taking the ounce of prevention, thereby making the danger of fire loss much less possible.

Few brick have been stored in Chicago by the manufacturers this summer. The demand has been large, and the plants have been running to their utmost capacity to meet this demand.

Some of the plants have been able to catch up a trifle and have begun to set aside a few brick, though indeed the demand is still quite strong, and some plants are still unable to fill their orders. It now looks as though there will be a big fall demand and there is a possible danger that those plants which will be unable to store brick will be compelled to operate until early winter in order to accumulate stock.

Several days ago a bill was filed in the Superior court by the Hanreddy Brick Co., asking that the chief of police and the commissioner of health be restrained from interfering with its business or encroaching upon its premises. This was due to the fact that the chief of police informed the president of the company that in the event of his firing the kilns at the plant he would make himself and others liable to arrest. The outcome of the matter will be of interest to the manufacturers, not only of brick, but of other clay products.

President Schlacke, of the Illinois Brick Co., states that his company has had a very fine summer's business, and in fact that the present year has been remarkable from the fact that the usual summer dullness was absent. Usually, in July, the demand decreases appreciably, and the orders are much less, but the present year has proven the contrary, and there is every indication now that the fall will likewise show a new record. The company has, within a few weeks, been able to store a few brick, and hopes to catch up a little from this time forward.

F. W. Darling, of the Clay Products Co., who has entirely recovered from his recent illness, left on August 8 for a business trip to California. He will be absent until early in September.

The Wm. E. Dee Co. notes with pleasure a continued active demand for all lines of its clay products. Sewer pipe is firm, and there has been an advance in the list recently, which is received with pleasure by the company. Wall coping and tile are in good demand now. This company has recently begun to export its building tile. It has for a long time manufactured wall partition and has now entered the field with a building tile, called the Deeco tile. A number of houses have been erected with this material and it has proven entirely satisfactory.

The report at the office of the Jenkins & Reynolds Co. is to the effect that business in face brick lines is very much on the jump these days. Mr. White is one of the busy men in the face brick line now, and is being kept quite active taking care of the numerous orders received.

The S. S. Kimbell Brick Co. notes that there has been no decrease in the call for face brick within the past few months. This has been a remarkable year for the company, and there has been no time for vacations owing to the very great activity and the steady demand that does not permit a day off. Everything now points to a fine fall demand and every preparation is being made to care for it.

The Carey Brick Co. has not been able to store any goods and as fast as they are manufactured there are hungry contractors waiting for them. This has been the case for several months, and it looks as if it would continue for at least several months more at any rate. The plant has been working to capacity for several months, and this has been a banner year for the company.

At the office of the Bonner & Marshall Co., the reports indicate more than the usual activity. An increased number of salesmen have been added to care for the demands, and the orders continue to come in briskly. They have not, at all times, been able to secure all the brick wanted. The plants have found it difficult to care for the orders and have requested the company to hold up a little until there has been time to accumulate a stock. This gives a fair indication of the extent of the present year's demands.

According to reports from the office of the Chicago Hydraulic Press Brick Co., the conditions are favorable for the face brick industry. Mr. Varney, the manager, states that conditions are as favorable as could be hoped for.

Mr. Cormack, manager of the face brick department of the Wisconsin Lime & Cement Co., has been out of the city on business.

Mr. White, of the Jenkins & Reynolds Co., is out of the city looking after some business for the company. Business is very active at this company's quarters now.

The announcement of the coming Clay Show is arousing interest and there will be a very much better showing made by the Chicago delegation in 1913, though no fault could be found with the exhibit made this year. With the past for a guide, there will be a notable advance made. The Chicago clay men are on the job at all times, and they have done and will continue to do a great deal to make the coming show a most wonderful success.

NEW YORK.

New York, August 27.—The clay products market in the east has suffered a relapse during the last fortnight. Instead of the stiffness which prevailed up to the tenth of the month, there has come a marked decline in demand and an easier tone to prevailing prices as far as the Hudson river product is concerned. In the Raritan valley the situation is still fairly strong, but buying is not as strong as it should be at this time of the year.

Usually a slump in buying follows a general stocking movement, but in this case there has been but little stocking and, indeed, there has barely been enough brick available to meet current building requirements. The enforcement of the building line encroachment law has forced money into alterations during the last five months which otherwise would have gone into new construction work and so the demand has fallen off for new brick.

The manufacturers are not sorry this condition has come to pass because the labor situation in the Hudson valley has gone from bad to worse and there seems to be no hope of improving the supply of workmen. Producers are bending every effort to making their full complement but they have produced less than 70 per cent of their annual quota and the season has barely two more months to run.

Distributors have fought hard to keep prices down to present levels and they breathed a sigh of relief when the tension was eased up toward the middle of the month, especially since the market automatically waned.

In the front brick department, the demand has increased as the demand for common brick has decreased. Prices, therefore, are steadily maintained and concessions are hard to get.

All the other departments in the clay industry here are steady. Most of them report good demand. Plants are operating at heavier capacity than even during July when they were running well up to capacity and some of them, notably fire proofing material, are booked ahead of delivery into the first quarter of 1913.

TEXAS.

Austin, Texas, Aug. 23.—Good reports as to the activity in various lines of building trades continue to be received from all parts of the state. The prospects for a very large cotton production in Texas are most promising and there is a general feeling of optimism in business circles. It is significant that plans are on foot for more active building operations for this fall and winter than ever known in the history of the state. It is noteworthy in this connection that there is a constant increase in the magnitude of buildings that are being erected, not only in the larger cities but in the small towns. Whereas, a few years ago a building of eight stories was so rare as to be a novelty in any Texas city they are now considered of no unusual moment. One so-called sky scraper after another is being erected in San Antonio, Houston, Dallas, Fort Worth, El Paso and Waco.

An important feature of the month is the increased demand for paving brick that comes from different cities of the state. The campaign of the lumber interests to bring about the use of wood-paving block, which has been successfully waged in Houston and some of the other towns shows evidence of a collapse and it is believed by brick manufacturers that the time is near when the use of pavers will assume its former scope in Texas.

In Denison, the contract has been let for the paving of East Main street from a point near the Union station east to include the intersection of Crockett avenue and also of North Houston avenue. Brick of Thurber manufacture will be used on both these streets.

The Municipal Paving Co., of Dallas has been awarded the contract to pave Live Oak street between Pacific and Central avenues in that city with Thurber vitrified brick. A part of this street was paved with Thurber brick, some time ago, and it has given excellent satisfaction, it is stated.

W. T. Bartlett, police and fire commissioner of Dallas, recently made an inspection of the police farm at Minneapolis, which is conducted by that city. He says, that, of all he saw, nothing impressed him more favorably than the brickmaking plant which is conducted upon that farm as a municipal industry. Mr. Bartlett will recommend to the city commission of Dallas that a similar police farm and municipal brick-making plant be established by that city. He believes, he says, that a plant of that character would be self-supporting almost from the outset. The kilns of the Minneapolis brick factory are all operated by city prisoners under the direction of experienced brick manufacturers. The entire output is utilized in the construction of municipal buildings and other city work. There is an abundance of clay near Dallas suitable for such an industry, Mr. Bartlett said, and he advocates the purchase by the city of beds of this character that will afford a supply of clay for a large municipal plant. It is said to be the experience of the municipal authorities of Minneapolis that the cost of brick for use by that city is much lower under the municipal plan of manufacture than where the material is purchased from private plants.

Mexican Opportunities.

The recent publication in "Brick and Clay Record," of the opportunity that was offered at Tampico, Mexico, for the establishment of one or more brick manufacturing plants has caused a number of American brick men to visit that section, during the last few weeks and to look over the situation with a view of engaging in the industry there. One of these prospective investors was J. L. Hurst of Houston, who is said to have made preliminary arrangements for establishing a large factory near Tampico for the making of brick. Preliminary to the establishment of the plant, he is making a thorough test of the clay deposits of that section with a view of determining their suitability for the manufacture of both brick and tile. Other Americans are also investigating the clay deposits, and it is believed to be practically assured that in due time the needs of Tampico and adjacent territory in the matter of brick for construction work will be fulfilled. In the meanwhile, the building activity that is going on in Tampico has caused a serious brick famine. As a result of the shortage, prices for the material have advanced to $25 to $28 Mexican currency per 1,000. This is equivalent to $12.50 to $14 United States money per 1,000. A few years ago the same quality of brick could be purchased in Tampico for $14, Mexican currency, per 1,000.

Comparatively little is known as to the extent, and quality of the clay deposits in Texas. While an investigation into these resources has been made, in some localities there has been little done in the newer settled portions of the state in the matter of determining the suitability of various clays that are known to exist for the manufacture of brick and earthen products. The Bureau of Geology and Technology of the University of Texas has done some work along this line and it is planned by Dr. William B. Phillips, who is at the head of that department, to soon greatly enlarge on the work of clay researches.

THE PACIFIC COAST.

San Francisco, Aug. 22.—The building permit valuations for the large coast cities in July showed a big increase over the month previous in almost every case, making this one of the best months of the year or of the last two years. The San Francisco permits aggregated a total of $2,452,725, an increase of $400,000 over June, almost equalling the record for the banner month of March, which was the best month in three years. Los Angeles had permits for July amounting to a valuation of $3,585,014, which is her best record in the last few years and perhaps the best record ever made in that city. Business conditions have picked up materially in Oakland, Portland, San Diego and Sacramento. While building operations are still very numerous, it does not seem likely that this month will show as fine a record as July. The demand for clay products has fallen off a little, but the market is still very fair and brick manufacturers especially are pretty well satisfied.

Common brick is moving in steadily, large quantities, with the price of $7.50 per thousand, holding very firm. Brick plants throughout the coast territory are running full capacity for the most part, and the total production for the year will probably exceed that for the last three years.

Progress Shown in Publicity Work.

Nat C. Ellery, manager of the Brick Builders' Bureau, is getting his publicity program in fine working order and making good progress in this city. Last week he addressed a communication to the San Francisco board of supervisors in behalf of the Master Brick Builders' Association, urging that brick be specified for the arches and faces of the tunnels to be built in this city. By referring to a report from engineers of the tunnel system of the Pennsylvania railroad he made a strong point in favor of brick. This report states that for some reason, which the engineers have not ascertained, the concrete lining of a number of their tunnels is disintegrating, while where brick were used the walls are firm as when built. He also called attention to the fact that brick arches are in use in the street tunnels of Los Angeles and in the tunnels of the bay shore cut-off of the Southern Pacific and are highly satisfactory. Mr. Ellery gave figures to prove that by using brick in the construction of the arches of the Stockton street tunnel, a saving of $30,000 could be made for the city.

At the quarterly meeting of the Contractors and Dealers' Association of California, which was held two weeks ago, the opinion was expressed that it is likely to develop into a national organization. Parties in other states have become interested and are watching keenly the activities of the California body. The association has a membership of 1,700 in California, about 500 of them being from San Francisco. One of the chief objects of the organization is the remedying of labor troubles and the harmonizing of interests among contractors and dealers. At the meeting, the situation in the Oakland building trades was gone into and definite action in the matter was planned for September. In Oakland, the labor situation may be described as "half open shop," which means endless disputes on every important job.

Mr. Smith of the United Materials Co., states that the Port Costa brick plant is very busy turning out the 2,000,000 brick it must supply for the new Standard Oil refinery at Richmond, Cal., and for numerous other jobs demanding varying quantities of brick. One of their latest contracts is for common brick for building two new garbage incinerators in San Francisco. Deliveries on these jobs have already been started.

Howard Frost, vice-president of the Los Angeles Pressed Brick Co. was up from the south last week. He reports that their factory is running day and night.

The Port Costa plant has turned out more brick, and of better quality, during the past two months than for any like period in its history, according to the statement of the company.

Gladding, McBean & Co. has just been awarded the terra cotta contract, amounting to $20,000, for the Bilicke-Rowan building at Fifth and Broadway, Los Angeles, and also for the terra cotta on the Hollingsworth building on Hill street. The amount for the latter is $24,000. This company is still very active in the sewer pipe plant, turning out vitrified pipe for sewer contracts.

G. D. Cadwalader, secretary of the Los Angeles Brick Co., was a visitor here last week.

Neil Sullivan, assistant superintendent of the Oakland Paving Brick Co., son of W. J. Sullivan, the superintendent, was killed in an automobile accident on August 15, when his machine collided with a Western Pacific train near Decoto, Cal. He was only 23 years of age and had but recently come out from Chicago.

The plant of the Oakland Paving Brick Co. has been remodeled and equipped with much new machinery by the American Clay Machinery Co. and it is expected that a product much superior to that hitherto turned out will now be possible.

The Louis A. Hicks Co. has been awarded the contract for supplying the brick for the new San Francisco armory. Common brick is specified. The building will be partially of concrete.

The Redding Lime & Brick Co., of Redding, Cal., is a new California Company soon to have a plant in operation. The company owns fifty-two acres of splendid clay deposits and will establish a plant employing about forty men and a capacity of 40,000 brick per diem.

The San Luis Obispo Brick Co. of San Luis Obispo, Cal., began to deliver 300,000 brick for the Channel Commercial Co. building the early part of the month. This is the largest order yet booked by the company.

The Sacramento Clay Products Co. of Sacramento, Cal., which recently succeeded the Silica Brick Co., has just burned its first products under the new management and the results are very satisfactory. The plant is to be considerably enlarged. At first the principal products will be wall tile for fireproof buildings. Twenty-five men are employed at present. The president of the company is J. P. Dargits, and the manager is George H. Emery.

The Standard Brick & Tile Co., at Colton, Cal., is installing machinery in a new plant and getting ready to manufacture sand-lime brick as well as clay products. A spur track has been built, and electric power will be used in the factory.

Peter Tracy has dismantled his old brick plant at Arcata, Cal., and shipped the machinery to Myrtle Point, Ore., where his brothers, J. W. and Lee have started a brick plant. Peter will shortly open a thoroughly modern brick plant at Arcata, using electricity for power. He will also make tile.

A new Oregon corporation is the Fairmont Brick & Tile Co., at Portland. It is capitalized at $5,000 and the incorporators are M. E., J. E. and Evelyn Field.

City Engineer Randal, of Sacramento, Cal., is preparing plans for a modernized sewer system for the Capital City.

The Redding Lime & Brick Co., of Redding, Shasta county, Calif., is a recently organized company. M. T. Hill, the president, says the new plant will be in operation about April 1, 1913.

Representatives of the famous King estate in Oakland, Calif., recently inspected the clay deposits on the property of the John Nichol Co., at Richmond, Calif., with the view of purchasing the same and developing them for the San Francisco market.

The Jackson, Mich., state prison officials are considering the installation of a brick plant at the prison. The prison board has considered bids for the machinery and invites further bids. The capacity of the proposed plant is to be 20,000.

The Buckeye Stone & Clay Co., of Columbus, O., has been incorporated by Van Wert, O. E. Leonard and others, with a capital of $100,000.

J. B. Clemens, Claude Trusler and Dr. S. L. Trusler have a force of men at work installing the machinery and making dry houses for the Oakland City Clay Works, at Oakland City, Ind. The clay works will manufacture tiling and brick.

PITTSBURGH.

Pittsburgh, Pa., Aug. 31.—While the paving and building brick manufacturers declare they have lots of orders on hand, and many of these same manufacturers admit the fact that they are far behind on their orders, yet many architects in the Greater Pittsburgh district are without any work "on their boards."

While this may seem strange, in face of the fact that the brick manufacturers are busy, it is nevertheless the truth. The large architects, however, are busy, as leaders in any business always are. These "big fellows" have some big drawings on hand, and have commissions on file which will take them months to complete. But, it is the little fellow who needs sympathy.

"We are three months behind on our deliveries of paving brick and block," was the comment of one large manufacturer in the Pittsburgh district, "and our business is pretty well scattered. We are not shipping into any one territory, but our orders now on file call for deliveries in many of the largest business cities in the country. Paving is at its height this season, and while labor appears to be scarce in some localities, the contractors have been able as a rule to keep up with their 1912 contracts."

Report is current in the district that one big brick machinery company, whose plants are located in Ohio, planned to make a large exhibit of their special brickmaking machinery during the coming Pittsburgh Exposition, which opens early in September. It has been found, however, that time is too short to make the machines which it was planned to place on exhibition, and for this reason the exposition plan has been given up for this year.

The plans now being drawn by the order of the Kauffman Realty Co., of Pittsburgh, for a $1,000,000 hotel to occupy the site of the Griswold Hotel of this city will mean the letting of another brick and clay product contract probably in October. The announcement of the plans to erect this new house caused considerable interest among Pittsburgh brick salesmen, and they have been working night and day to get their brick "placed."

Western Pennsylvania brick manufacturers have been much concerned this month over the new traffic regulations of transcontinental railroads, recently filed with the officials of the Interstate Commerce Commission, calling for an increase in freight rates on commodities after Sept. 2. The change stipulated is taken to mean an advance in the rates between points east and west, but would materially reduce rates in the inter-mountain territory. The commission, the brick manufacturers hear, will make an examination of the new rates, and if found to be unreasonable will order a suspension. The proposed increases planned by the Buffalo, Rochester & Pittsburgh Railway in the transportation charges of building brick from points in New York state to destinations in Canada have been suspended by the Interstate Commerce Commission until Feb. 18, 1913. These proposed advances, so it is learned here, will result in an extensive inquiry.

The bill of United States Senator Pomerene, of Canton, O., which provides for a uniform system of bills of lading and regulating the transfer of such bills, passed without a voice being raised against it. The bill contains a complete code of laws governing the issue and use of these bills of lading and is practically identical with the laws of several states.

When the Chamber of Commerce starts on its trip around the United States with its "Made in Pittsburgh" train there will be one display in the exhibit cars which will prove of more than ordinary interest—that of the Pittsburgh-Buffalo Co., and which will show samples of all the brick manufactured by this company. The display will be in charge of President John H. Jones. This train will visit 40 cities in 18 states.

The selling force of the National Fireproofing Co. has executed a vast number of large orders this season, with the result that the business of the company is showing wonderful advances. It is currently reported that the company has a record volume of business on its books and the outlook is bright, owing to the building of the New York subway and other construction work which will create an additional demand for the products of the company. The ownership of a half interest in the new plant in Canada recently constructed by the company and the acquisition of the Great Eastern Clay Products Company, should increase the earning power of the great corporation. Financial brokers report that the prospect looks bright for the dividend rate of this company to be increased ere long.

George S. Norbeck, connected with the Lancaster (Pa.) offices of the Mountville Brick Co., went to Philadelphia and closed the contract to furnish the face brick which is to be used in the construction of the fronts of 87 new houses which are to be built there at an early date. The order is one of the largest the company booked during the summer months.

There was a brief strike at the plant of the Osceola Brick Co., at Philipsburg, Pa., recently, lasting just one day. After five of the strikers were discharged the rest returned to work, and new men were secured to take the places of those released.

The new plant of the Sandy Ridge Fire Brick Co. has been placed in operation. This plant taking the place of the one destroyed by fire at Philipsburg, Pa., some months ago. The capacity of the new works is placed at 26,000 per day, and all the machines installed are of the latest models.

The plant of the Basic Brick Co., at Johnstown, Pa., is being razed. This plant was built by the late Frank Williams, being begun before the great Johnstown flood in 1889. Later the property was taken over by the Harbison-Walker Refractories Co., of this city. Some years later, however, the Pittsburgh company stopped operations there.

Under the management of E. E. Adams, the Eagle brick plant at Lock Haven, Pa., has been remodeled, and the company is now manufacturing a high grade face brick. The company has booked orders for more than one million brick, and is operating its plant to capacity. A new vein of shale, 60 feet in width and 60 feet in height, is being opened. The sales department is under the management of B. F. Pletcher, who was also recently chosen assistant manager of the property.

Fire that is believed to have been of incendiary origin at the Jacob Pontz brick yard at Columbia, Pa., caused considerable loss.

Announcement has been received here of the incorporation at Wilmington, Del., of the Consolidated Coal & Clay Products Co., with a capital stock of $500,000.

New clay veins will be opened by the Pennsylvania Fire Brick Co., at Philipsburg, Pa. This will result in the construction of a branch railroad nine miles long.

The Guarantee Title & Trust Co. of Pittsburgh, as trustee, has announced a trustee's sale of the real estate of a "going brick plant." The announcement then follows with this statement: "Ten per cent cash on day of sale, balance on confirmation of sale by the court and delivery of deed. Bonds of the said Douglass-Whisler Brick Company secured by the mortgage aforesaid will be accepted in lieu of cash to such extent as said bonds shall be entitled to payment in cash out of proceeds of said sale."

Report is current here that a fire brick plant is to be built at Hicks Run, near DuBois, Pa., by some New York men, the names of whom are not known. It is also said that large deposits of fire clay already have been purchased.

The Elk Fire Brick Co., at St. Marys, Pa., has started the construction of large buildings of steel, brick and concrete, which will replace all former wooden structures. An asbestos roof will be a feature. Improvements will cost, so it is reported, in the vicinity of $50,000.

With a capacity of 50,000 bricks per day, James B. Spahr, a Chambersburg, Pa., city councilman, has established a brick plant at Shippensburg, Pa.

The opening of the Western Maryland railroad by the Pittsburgh & Lake Erie Railroad Co. means that an almost endless quantity of fire clay and other raw clay materials are now available.

R. G. Yingling, of the Pittsburgh offices of the Kittanning Brick & Fire Clay Co., has returned from Evans City, Pa., where he went to book some large contracts for building brick.

The proposition to refinance the National Fire Proofing Co. in order that the payment of its debts might be spread over a greater number of years, was approved at a meeting of the stockholders held recently. A total of 173,280 shares were voted in favor of issuing $2,500,000 bonds, there being but one dissenting vote. Heretofore the company has been retiring its outstanding bonds, now amounting to $1,000,000, at the rate of $250,000 a year. Beginning September, 1913, the company will pay off its funded debt at the rate of $125,000 a year. William M. Scaife presided at the meeting. President W. D. Henry, of the company, was asked numerous questions. In answering them he said that during the first six months of this year the company had booked orders $2,000,000 in excess of the amount of business secured during the first six months of last year, and that the indications were that this increase would continue. The June and February business was the largest ever booked in any two months in the company's history.

In regard to increasing dividends on the preferred shares, Mr. Henry said that this was a matter entirely in the hands of the board of directors and he would not like to speak for them. The company experienced its banner year in 1906 and based on the volume now being booked, this year will show gains over that year.

The earnings for the six months, it was stated, show an increase over the corresponding period of 1911. The tendency has been toward better prices for materials. The meeting was well attended. It is stated that the outstanding bonds of the company will be retired out of the funds from the sale of the new issue, which, after paying off its floating obligations, will give the company a working capital of $500,000.

SYRACUSE, N. Y.

Syracuse, N. Y., August 25.—The brick business has been quite good around here this year and the demand for common face and fancy brick has been improving. It has been a good building season and considerable work has been in progress.

Just a little east of Syracuse the brick business is demoralized, but in the city, itself, and on through the western part of the state, the business shows considerable improvement. This is owing to the fact that the local demand for brick is strong, while only a few miles east there is no local demand and makers have to compete with the Hudson River brick yards, in selling their products either in New York City or Boston.

The Paragon Plaster Co., 300 West Water Street, closed down for six weeks this spring in order to put more machinery in the sand lime brick plant, which is located in the west side of the city. This improvement cost $5,000 and will enable the company to turn out 6,000,000 brick a year, which sell for $7.75 delivered here. These brick give good satisfaction. The stock left over from last year was cleaned out quite early in the season. The improved machinery enables them to turn out a much better quality brick, but of the millions that have been made and used in past seasons, none have ever been found imperfect or unserviceable. A considerable part of the product is sold right here and some shipped outside. The company also acts as agent for brick of all kinds—face, front and fire brick and for sewer pipes.

The Onondaga Vitrified Brick Co., of 128 East Fayette street runs its plant the year around, making 50,000 common and hollow brick a day. Last year, big improvements were made to the brick sheds. Recently a new dry pan was installed. This concern sells its product largely here and through central New York state, getting $7.75 f.o.b. for common and $8.50 for hollow brick. The concern has its own clay and shale beds and makes on the average 15,000,000 brick a year. The local trade is good and brick conditions are not bad at all. A good year on the whole is looked for this season. J. H. Mead, the superintendent and general manager, was very much pleased with the Chicago clay show.

The Mechanicsville (N. Y.) Specialty Co. has installed a new burning system in the plant of the Duffney Brick Co. of that city, for the purpose of burning all classes of clay products that can be burned separately in an open kiln, at a saving of 75 per cent. This consists of burners being placed in the kiln ground in such manner as to be supplied with air for the purpose of burning a low grade of fuel which minimizes the expense of the burning of clay products, such as common brick, paving brick, pressed brick, terra cotta, etc. With this system, there is no stationary kiln required which gives the advantage both in selling the product and loading same for transportation and insures a further saving in the lessened expense of first installation.

Pass & Seymour of Solvay, near here, make porcelain electric sockets using an imported china clay body. Have three, sixteen-foot kilns and two of fourteen feet. This plant was erected three or four years ago and was built large enough to take care of any large increase in business. Business has developed at a surprising rate. This concern consumes all the product made. In assembling the complete electric fixtures, a new device is being made to prevent a lamp being stolen. It is called the shurlock attachment, which makes it impossible to unscrew the globe from the lamp and takes it away, as one has to have a key to unlock it. The sockets are burned to a heat of 24,000 degrees centigrade.

The Iroquois China Co. of Solvay, has not been running full time, as the company is in the process of a reorganization. It makes dinnerware and has six burning kilns and three decorating kilns. W. B. Kerr is the general manager.

The Syracuse Pottery Co., 2913 East Division street, makes flower pots, fern dishes, saucers and hanging baskets and does a big business. It has one of the most up-to-date potteries of its kind in the country. This strictly earthenware plant has been running forty years. The pieces are made in molds and the sizes from 1¾ to 10 inches are made by machinery, but the sizes from 10 to 16 inches are made by hand. C. Breitschwertz, who started this plant in 1876, with one kiln and one or two men, now has thirty employes. There were then 800 potteries of this kind in the country; now there are twenty-two, yet today three times as many pots are turned out as at that time, because the factories that are running today are large ones. Red clay is brought from a point six miles from here. There is considerable iron in it. It gives a good red color and burns at 1,500 degrees. The top of the clay beds have more iron than lower down, but the upper and lower strata are mixed, so as to get the proper material for the purpose. The pots are burned red, no glaze being used. When Mr. Breitschwertz came to this country a man could make 300 ordinary small pots a day, while now two men at a machine will turn out 2,500 to 3,000 a day. He has eight machines, some run by power and some by hand. Improvements are being made to the plant and new machines put in. There are three kilns, one being a double decker. The pots when fired are piled in bins, each bin holding one size, so that the shipping clerk can easily get what he wants. The bin having three-inch pots holds 4,000; the five-inch, 8,000; the four-inch, 6,000 and all sizes are kept crated ahead of time ready for instant shipment. The output is sold mostly to florists in all states in the union. This plant has an output of 7,000,000 pots a year and generally keeps in stock 2,000,000 pots. The clay used makes a good strong pot of the best quality. The big business is done between January and May. The daily output is 25,000 to 30,000. A lot of small toy pots are also made for the children and for St. Patrick's Day.

George W. Pack & Son, 415 East Water street, has quite a stock of common brick left over from last year, but the plant is operating in good shape this season. This firm makes 2,000,000 brick during the season, running single crews. It has its own clay beds and sells the brick for $7.25.

The York-Penn Brick Co., was organized in the S. A. & K. building, to act as selling agents for several lines of brick and clay products. It has the exclusive selling agency for the eastern and central part of New York state for the following: Fiske & Co. of New York and Boston, tapestry brick; Harbison & Walker Refractories Co. of Pittsburg; the Bradford, (Pa.) Pressed Brick Co.; the American Enameled Brick & Tile Co. of New York City; the Federal Terra Cotta Co. of New York City. Oliver J. Stewart is secretary of this concern and B. J. Cummins, salesman.

The Syracuse Wall Plaster Co. of 319 North Clinton street, has been fixing up a fine display of brick, set in panels, which makes a very attractive exhibit. It carries mostly fancy brick for fireplaces and sells considerable tapestry. The firm does not sell much common brick.

The Silica Brick and Tile Co. was incorporated at Watertown, N. Y., to manufacture brick and tile and has equipped a plant there. O. Watson of Watertown, N. Y. and W. H. Gardner and J. F. La Rue of Philadelphia, Pa., are at the head of this concern.

UTICA, N. Y.

Utica, N. Y., August 25.—Utica is a very enterprising city and is growing fast. There is an increasing demand for business structures, factories and houses and there is considerable work laid out to do this year. The brick plants here have a good local trade and also ship to Boston as well as nearby places. It is understood that Utica brick will be used considerably in Rome this year, as there is now no brick plant there. Prices for brick here range from $7.00 to $7.50 and there is about 20,000,000 made here a year.

The Utica Trust & Deposit Co. will erect a new bank building at Genesee and La Fayette streets, which will be an imposing structure. The new Utica hotel on La Fayette street is a fine building just completed and is entirely built of brick.

The W. D. Peters & Co. handle considerable sewer pipe and brick.

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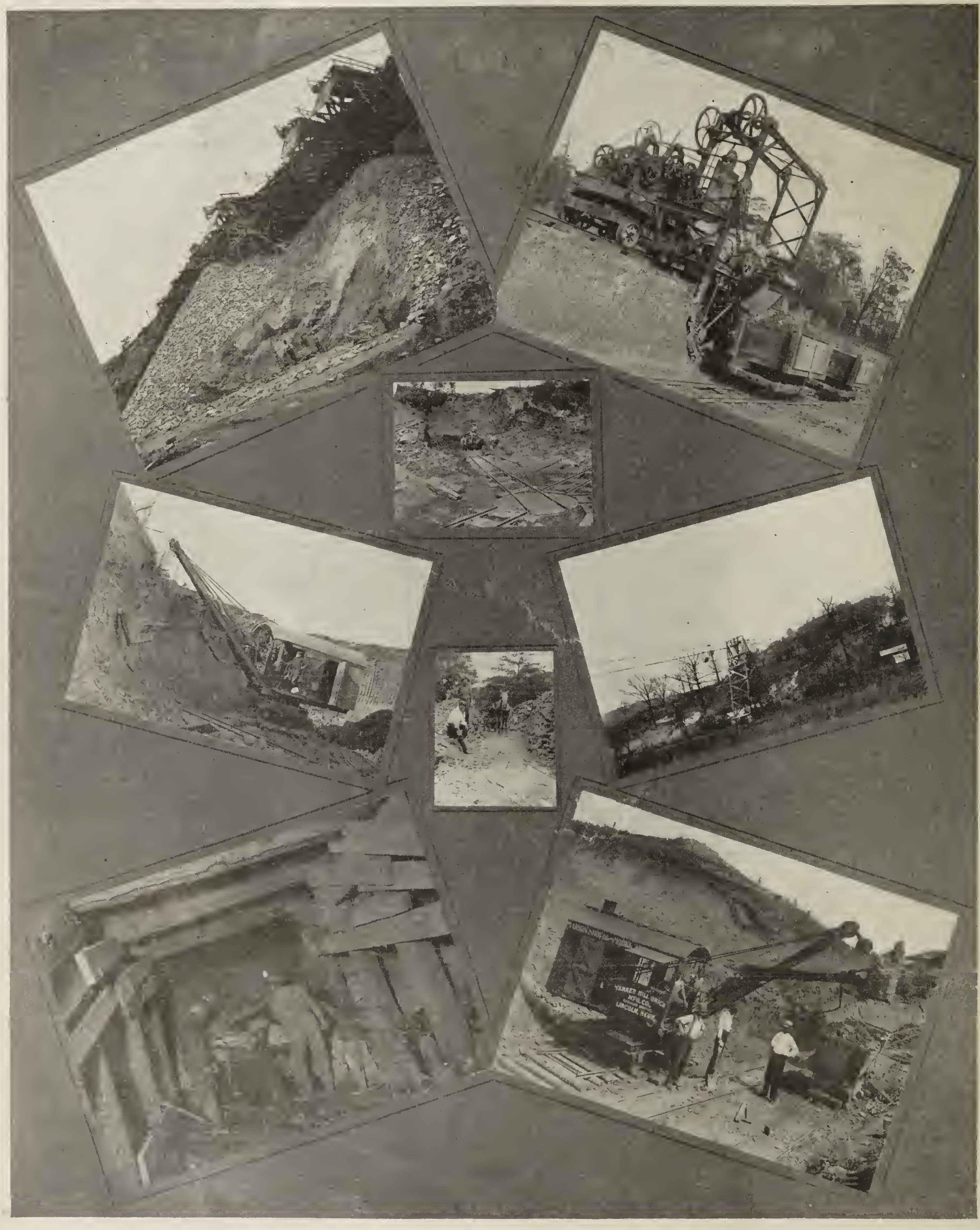
SOME REPRESENTATIVE CLAY MINING METHODS



While the primitive pick and shovel are still in use at many plants, the steam and electric shovel and clay digger are rapidly taking their place in the clay mining equipment of the modern yard. The industrial railway and the aerial tramway also are fast supplanting the horse and mule and are instrumental in reducing haulage costs.

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BRICK
AND CLAY RECORD

SEPTEMBER 15, 1912

CLAY MINING PROBLEM, A SERIOUS ONE

Widely Varying Conditions in Clay Deposits Call for Manifold Mining Methods —Practical Machines and Methods Described

Of the many problems confronting the clay product manufacturer there is none more perplexing or important in the solution than that of the clay pit.

Clay deposits are found in such a variety of conditions, no one method of procuring them can be determined as the standard. A system that works successfully in one pit or bank will prove useless in another. A machine that takes out the deposit economically and easily in one place will prove expensive and cumbersome in another.

Obviously this varying condition necessitates many methods and machines and the purpose of the following article is to describe every practical system in use today.

By **ELLIS LOVEJOY, E.M.**

WHEN we visit a clay working plant, in trouble, we suggest that we begin in the clay pit and follow the material through the plant. This is a logical beginning, but we do not do it simply to be logical, rather because we often locate the cause of the trouble in the mining methods.

The subject of clay mining is a fruitful one for discussion, but one quickly realizes that it is too voluminous to attempt to cover in a brief article. Every manufacturer having trouble should go into the pit and study, probably, the biggest problem in the plant. If the materials are right the rest is easy but if they are not right, everything may be wrong.

In this review of the subject we shall only endeavor to call attention to the several methods in use with a few illustrations of several of them.

Stripping.

Naturally the first problem is that of uncovering the clay body. Occasionally, we find that dollars are lost in poor products to save cents in removing a light cover over the clay. "It all goes in," says the manufacturer, and our reply is, "We see it does." We saw it all along the line to the finished product, and no doubt it shows up in the profit and loss account. "It all goes in" applies not only to the surface material but oftentimes to streaks and beds in the clay body, which should not go in.

We intended to skip the subject of "Stripping" but could not resist the above paragraph.

The problem of "Stripping" is simply one of removing a certain quantity of waste material and depositing it where it will never have to be moved again. It is a problem of quantity and local condition. Picks and shovels with barrow, cart or wagon haulage may be the cheapest solution; team or power scrapers; steam shovels; hydraulic work; each has its proper place and we occasionally find each misplaced.

The very first thing to be determined in opening a clay body and selecting the proper mining equipment is the character of the clay body in depth. If there is any doubt, the materials should be worked by hand methods until the problem is fully developed. We can then select the proper equipment. It may be that we will wish to get a uniform mixture from top to bottom; we may wish to use the top in one product and the bottom in another; we may require all the top, reject the middle and use a portion of the bottom; we may find it necessary to work from the top of the pit on account of quick sand in the bottom; there may be many things which will make us wish we had not been too hasty in selecting a mining equipment which we cannot afford to reject.

Selection of Equipment Important.

The usual methods of winning the clay may be listed as follows:

Pick and shovel with barrow, cart or tram haulage. Shallow plowing and collecting and delivering the clay by clay gatherers. Plowing and collecting by any kind of scraper, dumping through overhead bridges into tram cars. Power scrapers operated by stationary power plant, the scraper being drawn up an incline and automatically dumped into tram cars. Steam shovels with tram haulage. Ditching machines and tram haulage. German "Bagger" with tram haulage. Butterfly or clam shell dippers. Dredging machines. Underground mining, including shaft or pit work.

Pick and Shovel Work.

One would naturally think that pick and shovel work would be out of date these times, with the advancing price of labor and scarcity of men, but there are many situations where it is the most economical method. The difficulty of securing sufficient labor to operate the plant is more serious than the cost, and in view of this any machine equipment which will reduce the number of men required should be installed, provided it will do the work equally well. The important factor is to get the best mixture of the clay, and everything else is secondary. Hand work permits a selection and mixing of the clay which is not possible in machine work, and at the same time streaks of rock, sand, carbonaceous material and bowlders can be rejected.

Under favorable conditions one man can load fifteen tons of clay and occasionally as much as fifteen yards (about twenty tons) per day. This will make the cost from ten cents per ton to not to exceed fifteen cents per ton. Under less favorable conditions the cost will run from fifteen cents to twenty cents and occasionally as high as twenty-five cents per ton.

At a plant with a capacity not exceeding 20,000 brick per day the pick and shovel method will be found the cheapest, and where selection of the clay is important, it can be used to advantage in plants of much larger capacity.

Clay Plows and Gatherers.

The use of clay gatherers is especially applicable to dry press work in which it is necessary to have the clay dry. The clay is loosened with a harrow or plow and allowed to dry. Following this it is taken up by the gatherer and hauled to the storage shed. Usually the clay field is kept level, which has the disadvantage that if the clay bed is not uniform in depth, the product from it will change from year to year. However, a clay gatherer can be worked on a slope and thus a uniform mixture of the clay from top to bottom be maintained.

Overhead Bridge Method.

A favorite method of winning clay and an economical one, is plowing, picking up the clay in a drag or revolving scraper, dumping into a car through a bridge, and carrying it by tram to the factory. The tram cars run back into the center of the clay field and stop under a low bridge. As the clay is hauled over this bridge it is dumped into the car below. If there is a double track under the bridge or two bridges there need be no delay in gathering the clay.

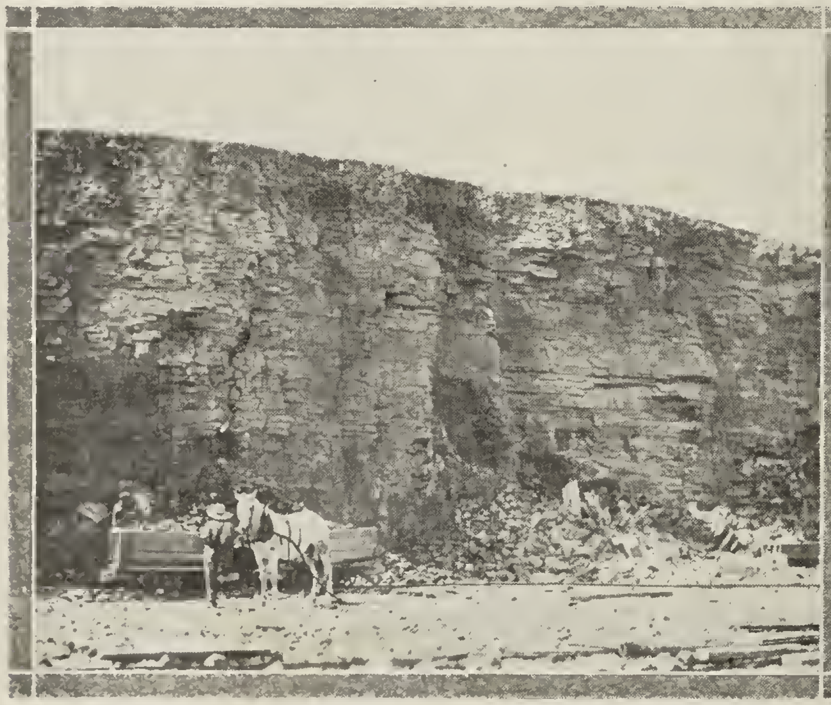


Figure 6—A Shale Bed in East Ohio Worked by Hand Method. The Bank is in Excellent Condition.

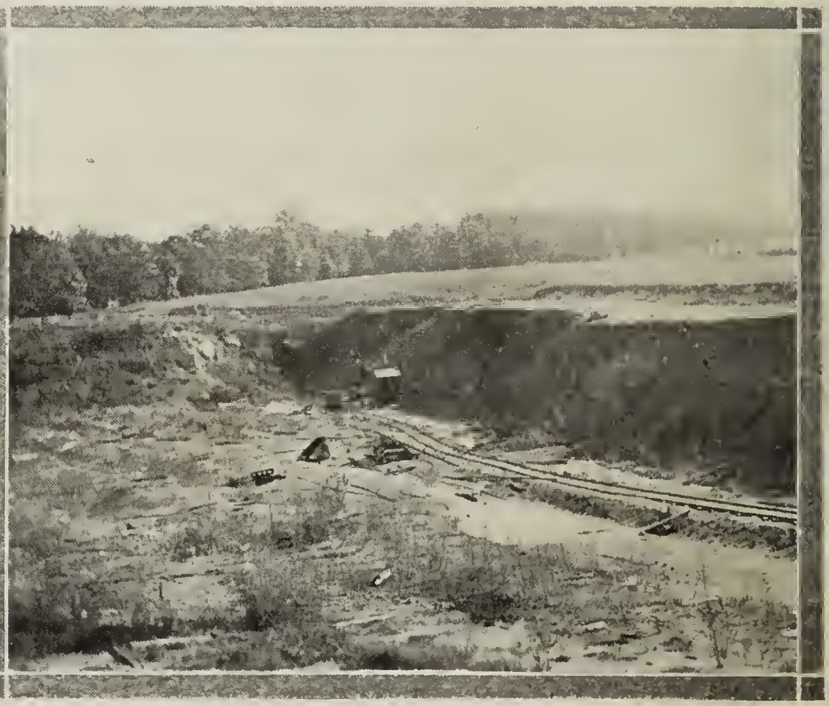


Figure 1—Famous Bed for Shale Largely Used for the Manufacture of Face Brick.

The expense of the equipment is small, and in consequence, interest, maintenance and depreciation are insignificant. The bridges can be moved each season and thus kept near the center of the working field.

We have seen a simple drag scraper used which in some situations is preferable to the ordinary drag or revolving scraper. It consists of a "V" shaped box without top or bottom, but the sides of the "V" were shod on the bottom with iron plates. The team is hitched to the open end of the "V."

It is a drag scraper in every sense of the word and picks up and dumps its load automatically. The team is kept in constant motion, and the driver stands on the scraper to hold it down while the load is being picked up. Its use is naturally limited to short hauls, which is true of any drag scraper. A wheel scraper should be used for long hauls.

The cost of winning clay by the overhead bridge method will be less than ten cents per ton.

By working the clay on slopes, fairly good mixtures may be had and sandy or other undesirable pockets of material can be left in place. All the equipment is within the pit, and where the pit is wet or the pit bottom soft (quicksand for instance), it would be better to adopt some method working from the top of the clay. Also where the clay bed is very shallow and large areas are worked out in a relatively short time, a method in which the equipment keeps pace with the working face of the clay will be more applicable than the bridge method, but in many situations the latter has distinct advantages over any other method when cost of equipment together with cost of operation is considered.

The Power Scraper.

In a number of localities there is being introduced a scraper system operated by a power plant on the bank of the pit. The operating rig consists of a self-contained boiler, engine and winding drum operating an endless rope. A large scraper is attached to the rope and by this the loaded scraper is drawn from the pit up an incline and dumped automatically into a car or clay storage shed as the case may be.

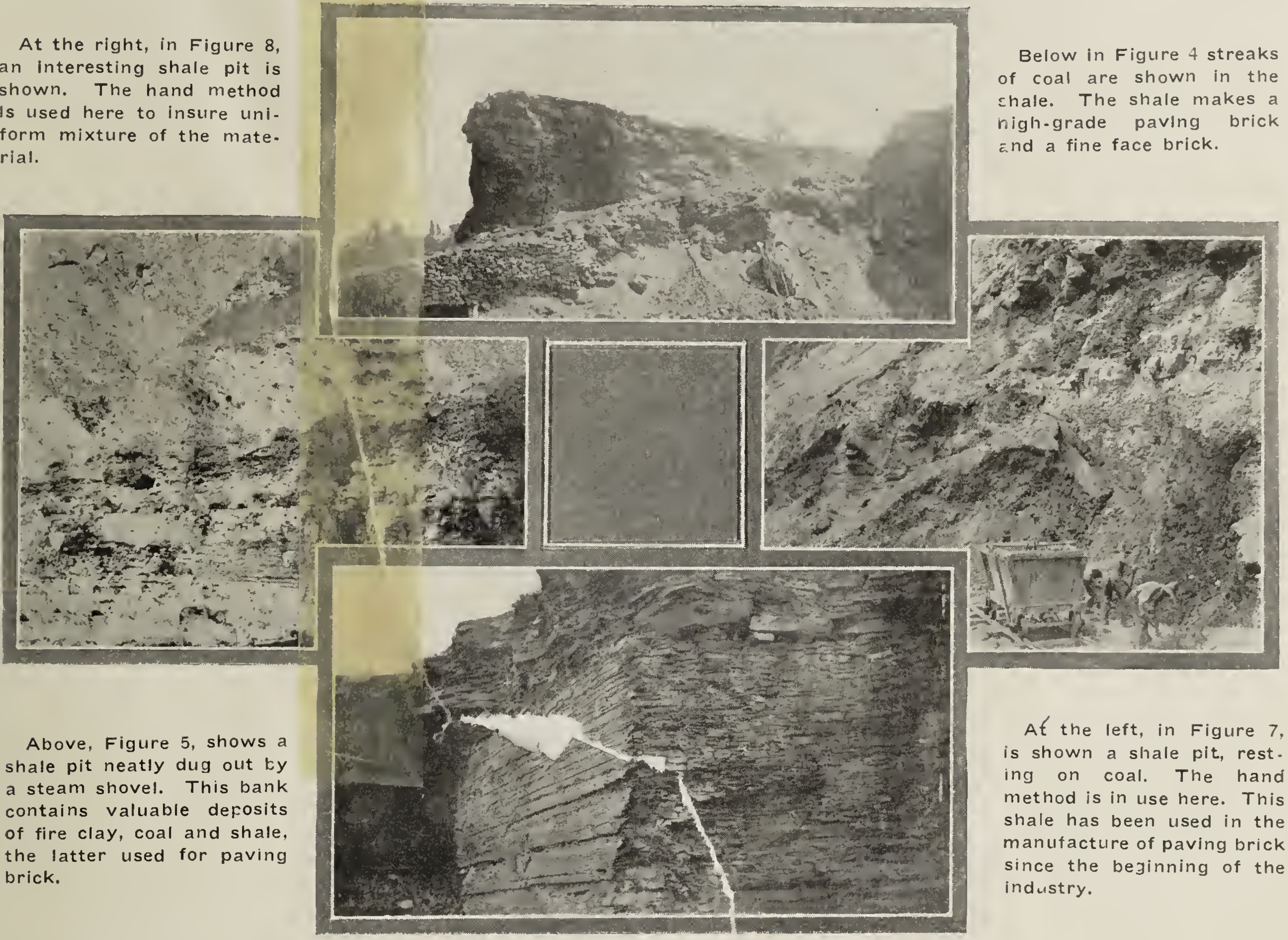
The advantages of this system are several: The power is on top of the bank and is not affected by a wet or soft bottom pit. There is nothing in the pit except the scraper and the men handling it. If the bank of the pit has any tendency to cave, the power rig may be set back any distance.

We saw some stripping being done with such a rig where the power was at the foot of a hill several hun-

SOME INTERESTING AND VALUABLE CLAY DEPOSITS

At the right, in Figure 8, an interesting shale pit is shown. The hand method is used here to insure uniform mixture of the material.

Below in Figure 4 streaks of coal are shown in the shale. The shale makes a high-grade paving brick and a fine face brick.



Above, Figure 5, shows a shale pit neatly dug out by a steam shovel. This bank contains valuable deposits of fire clay, coal and shale, the latter used for paving brick.

At the left, in Figure 7, is shown a shale pit, resting on coal. The hand method is in use here. This shale has been used in the manufacture of paving brick since the beginning of the industry.

dred yards from the stripping work on top of the hill, in fact over the crest of the hill and out of sight of the power plant. Electric signals were used to keep the operators in touch with each other.

In another location, an irregular bed of clay was being uncovered. The situation was such that the only other practical method would have been hand shovel work and wheelbarrow haulage, which would have been expensive.

This method gives us some leeway in pit work since we may cut deeper or less deep into the under clay, and we can get mixture of top and bottom clays. Pockets of sand or undesirable material may be skipped, but the system has not the flexibility of the team scraper method and is not readily applicable to spotty clay beds. Its strong points are economical operation, independence of pit conditions, and applicability to difficult situations.

Steam Shovel.

A discussion of the steam shovel is hardly necessary. We all know that where a large quantity of material is to be collected there is no cheaper method than that of a steam shovel. The first consideration should be quantity. Two men with a steam shovel will keep a large plant in material, but the same two men will be required for the smallest of plants. The depreciation of the shovel equals the cost of a third man. The interest on the investment, fuel, and maintenance will pay for a fourth man and more. It is pretty safe to say that where five men can do the work by hand, not considering haulage, there is no economy in a steam shovel, and the only reason for installing it would be scarcity of labor.

When, however, the quantity of material required is large, then the steam shovel may become the most profitable machine about the plant. The cost of the material in such cases may fall below five cents per ton.

Shovel Good Mixer.

The shovel is a good mixing machine if the height of the bank is not greater than the natural reach of the boom, but where the bank is high, at first we get all bottom material until the bank caves and then we get all top material until the caved material is cleaned up. In the manufacture of products which must be uniform, such as paving block, this irregularity is a serious matter. The value of the product is of greater moment than the cost of the materials. If we cannot get a uniform mixture from a high bank with one shovel, the bank should be worked in benches, using two shovels if the clay from the top and bottom benches must be mixed to get the desired product.

A steam shovel will dig any material, from soft clay to quite hard shale without any previous loosening, but it is necessary to loosen rock shales with powder. Shales, except those soft enough to be plowed, cannot be handled by any of the methods above considered except the hand work first mentioned, nor can any of the systems considered farther on be used. In shale mining, then, as a rule, we must decide between the hand method and the steam shovel work, and the decision lies between cost on one side and possible quality on the other. Shall we pay five cents per ton for the material or twenty cents? In paving blocks, for instance, at $12.00 for firsts and $7.00 for seconds, if a good mixture will give us two hundred more firsts out of each thousand we can afford to pay twenty cents per ton for the material.

If two shovels will give as good mixture as the hand work then they would become profitable over either the single shovel or the hand work. A decision in such cases often requires consideration of the factory operations. A clay storage shed may accomplish the mixing and thus permit the use of a steam shovel in the pit.

Giant Steam Shovel in Clay Pit at Cary Yards, Chicago, Ill.

A steam shovel does not permit any selection of the materials and this is a decided disadvantage in many pits, nor can we leave in place any pockets of undesirable material—everything in the path of the shovel must come out whether it goes to the factory or is wasted.

The shovel generally in use works in the pit and unless the clay bed is very shallow, the haulage tram must also be in the pit. As previously mentioned, many clay beds have quicksand under them or they extend below the ground water level, and it is troublesome to maintain a working base for the shovel and tram road.

Many clay workers do not know that steam shovels can be and are made with a back acting dipper and such a shovel, together with the tram road, can be placed on top of the clay bank where they will be out of the wet and on solid ground. A back acting dipper is limited in its working depth and is not applicable to deep pits.

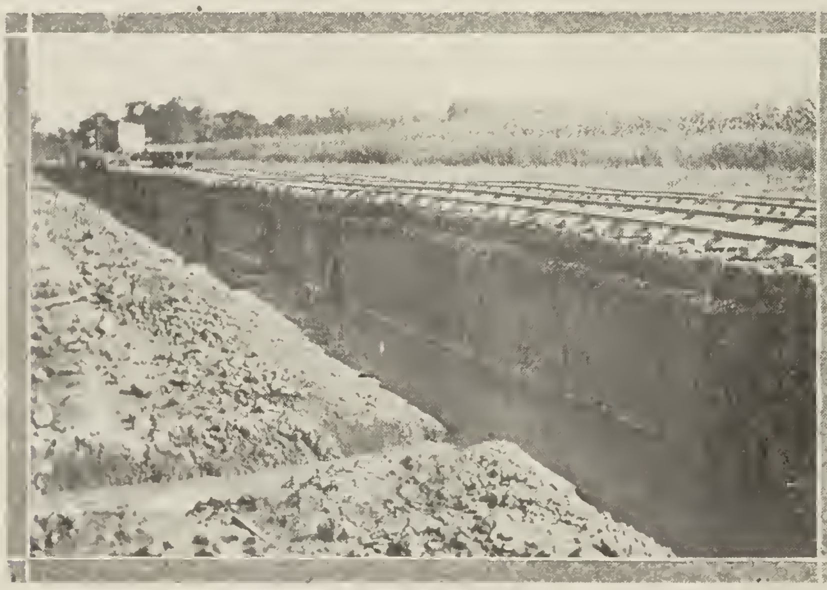


Figure 3—Showing Use of Buckeye Clay Digger in Soft Clay.

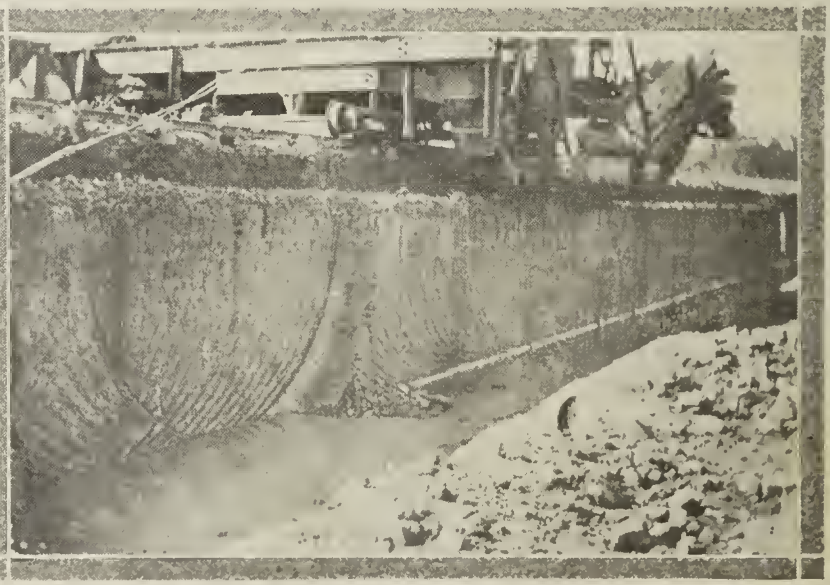


Figure 2—Soft Plastic River Bed Clay; Bed Often Very Wet.

Ditching machines have several points in their favor. They cut the clay into thin flakes convenient for feeding the clay preparing machinery. The cut is from top to bottom of the clay bed and the mixture in consequence is perfect. The cut is narrow and the machine crosses the clay field in a short period so that when the clay is put into storage we have a mixture of the materials areally as well as perpendicularly.

Ditching Machines.

The machine works on top of the clay bed, and as now arranged the tram cars are also on the same level so that all the equipment is out of the wet and soft pit bottom.

The working depth of the machine is limited to ten [illegible] feet, but this is ample for a great number of [illegible] deposits. In some clays which cave badly there is trouble in the operation since the machine works on the edge of the embankment with the cutting wheel overhanging the pit.

The depth of the cut is easily changed and it is possible to leave or take up the bottom clay in any degree required for a proper mixture.

The "Bagger."

The German "Bagger" is not used in this country so far as we know and we are surprised that the success of the ditching machine has not led to the introduction of the "Bagger." It is an inclined elevator rig with cutting buckets, and aside from any structural features or possible operating difficulties about which we have no information, it has all the advantages of a ditching machine with the additional advantage that it works the clay on a slope, thus eliminating caving troubles. It could be used to advantage in many cases.

Butterfly or clam shell dippers will have application in deep pits handling soft materials which could not be readily worked by any other equipment in the pit. We have seen a number of situations where such a rig could be used to advantage and where it was proposed to use them. Dredging machines also have a useful field in low lands where the clays are below water level.

Underground Mining.

We shall not attempt to discuss underground mining—it is a much larger subject than all the rest put together. It is one series of problems, beginning with the question of when to quit outside work and take up underground work. The problems sub-divide under various heads, until there is no end to them.

On the border land of surface work and underground mining, we have circular and square pits of various depths. A circular pit or well, fifty to a hundred feet or more deep, the walls of which may be unprotected or are held in place by framed timbers, belongs to underground work, yet in frequent instances there is no lateral work from the bottom of the shaft, or at least nothing except some gouging around the bottom of the shaft as far as it may be safe to work. On the other hand pits ten to twenty feet deep, with the sides held by planks or poles driven ahead of the workings, are in the surface work class.

Clay Pit at Yard 22 of Illinois Brick Co., Chicago Ill., Preparations Being Made to Mine Clay on the Second Level.

Roofs, Timbering, etc.

True, underground mining has its problems in roofs, timbering, drainage, haulage, ventilation, methods of working, tunnels, rooms and pillars, stopes, size of pillars to support overburden, weakening of pillars by disintegration, supporting area of roof, maximum room or stope work and minimum tunnel, entry or shaft work and methods of mining.

One perhaps can easily lay out a mine on paper, and perhaps work it out under the hill with absolute safety. There are two things he must consider, the lives and health of the men doing the work and the cost. He may drive only narrow rooms with massive pillars between and have the entries and rooms heavily timbered, all at a prohibitive cost. On the other hand, he may "gob" out a few large rooms at a low tonnage cost, but at the risk of a number of lives and the destruction of the mine. We have seen both extremes, and in one case we recall the snapping of posts at frequent intervals, which was explained when we discovered that the miners were loading clay squeezed from the walls by the settling roof. There are many unsolved problems in underground mining, whatever the mineral may be, and especially in clay mining, where we are dealing with a decidedly variable material.

Some Interesting Clay Pits.

The accompanying photographs which were taken especially for this article show a few Ohio shale and clay pits.

No. 1 is the celebrated Bedford shale, which extends southwest from Cleveland across Ohio. It is usually clean, burns a deep blood red, and vitrifies easily to a dense glassy body. It is largely used in the manufacture of face brick, roofing tile and hollow ware, including drain tile. The steam shovel is the favorite method of winning it.

No. 2 is a soft plastic river bed clay. The bottom of the pit is below drainage and often very wet, as the photograph shows. It was essential that the digging equipment should be on top of the bank, and a ditching machine delivering into cars alongside is used. The stripping is shallow and is removed by hand shoveling ahead of the ditcher, the waste being thrown into the pit. No. 3 is a general view of the same pit and shows several caved spots.

No. 4 is a shale pit in southeastern Ohio. It is interesting geologically but unfortunately the photograph does not bring out the interesting features. The shale rests on the Upper Mercer coal. About midway of the bank is a small streak of coal (Tionesta), which shows in the upper right hand corner of the picture. Six or eight feet below this is a bed of fire clay which, in the picture, resembles a bed of rock. On top of the bank (not shown in the picture) comes the Brookville coal with its underlying fire clay and overlying Putnam Hill limestone. The shale makes a high grade paving brick and fine face brick. For the pavers, it is best to work the material by hand, as shown in the cut, in order to eliminate the black shale which accompanies the Tionesta coal. For face brick the bank can be worked by steam shovel, and photograph No. 5 shows the south end of the pit which has been dug with a steam shovel.

No. 6 shows a shale bed in east central Ohio, the shale being used in the manufacture of fine face brick. The bed is remarkably clean and everything is used from top to bottom. It is being worked by hand but we know of no reason why a steam shovel cannot be used, as the conditions are favorable.

No. 7 is a shale bed resting upon the Middle Kittanning coal in eastern Ohio and has been used for the manufacture of paving brick since the beginning of the industry. The photograph is interesting in that it shows a marked vertical joint plane in the left center. Several plants are working this shale and all use hand methods largely, perhaps, to insure uniform mixture of the material. The upper part of the bed is frequently sandy, sometimes a sandstone, as shown in the cut, and it is desirable to leave this out of the mixture in some degree. No. 8 is the same shale bed in a neighboring pit from No. 7, and shows much the same formation.

View Showing Excellent System of Clay Mining in Use at the Plant of the Lincoln (Cal.) Clay Products Co.

JOINT CERAMIC MEETING.

American Ceramic Society Entertains German Association. Interesting Meeting Held.

Contrary to its usual custom, the American Ceramic Society did not hold its regular summer meeting but in lieu of this, arrangements were made for a joint meeting of the American Society and the visiting members of the Deutscher Verein fur Ton-Zement and Kalk-Industrie. The meeting was held in Pittsburgh, where three days were spent by the visiting delegates. Among the features planned was a dinner and general social good time at the Fort Pitt Hotel, Sept. 14th, and it was understood that each member of the American Ceramic Society would take as his guest one of the German visitors.

A number of American cities where members of the ceramic society reside are included in the itinerary of the foreign guests and among the number are Baltimore, Philadelphia, Trenton, Perth Amboy, New York, Pittsburgh, East Liverpool, Zanesville, Columbus, Chicago, Buffalo and Niagara Falls. A full program as mapped out for the visiting guests was published in our last issue.

We are interested to know what impression our vast American institutions will have upon our German brethren, and we hope to give a full account of the trip in a later issue.

CONCRETE FAILURES CAUSE COMMENT.

New York Paper Frankly Discusses Breaks in Big Dams and Sounds Warning.

The following from the New York Times concerning the use of concrete is of salient importance just at this time:

"When the Austin dam 'went out' and swept away a little city, drowning most of its inhabitants, the explanation given by the engineers was that for reasons of economy their plans had not been fully carried out by the owners of the plant. These statements generally were accepted though perhaps a few people may have had their doubts whether a big corporation, however soulless, would have been apt to risk a great investment by saving money in this particular way if its officials had been authoratively advised as to the probable consequences.

"The doubts may be strengthened by the fact that a million-dollar dam across the Ohio river near Gallipolis, built by the government and just completed, has repeated the Austin episode in everything except the destruction of life. Government engineers, as is well known, do not have any motive for sacrificing safety to economy, nor is there any interference with the carrying out of their plans. They, therefore, will have to find a different explanation for what has happened."

POSSIBILITIES IN THE CLAY INDUSTRY

Keynote to Progress Sounded by Robin Hood in "Claycrafter"—New Fields Must be Entered to Extend Use of Clay Products

SO great has been the development in the clay working industry in recent years along mechanical lines, that it would seem dangerous to predict anything more revolutionary to come in manufacturing processes than those methods that have already been tried. In fact, the development during the last three or four years has been rather toward the perfection of the devices already existing, the minimization of friction and the simplification of mechanical movements.

Nor is it to be expected that any very startling development will be made in regard to the perfection of cost systems. There are plenty of preachers on this subject in the business, and in order that the benefit of their preaching may be obtained in its fullest sense, it remains only for the readers of the excellent technical journals furnished to the trade to embody the preaching in practice.

Must Enter New Fields.

Possibilities for development in the clayworking industry must, therefore, be sought by extending the use of clay products in fields not employing them at the present time. The writer has made a study of some of the opportunities which seem to be at hand for the clayworker's advantage. Let us consider two or three of them at a time, merely as a presage of what may prove to be of special advantage to many clayworkers throughout the country.

Our readers will doubtless have noted the many columns which are being devoted to the subject of ventilation in all technical magazines and journal magazines. During the past two years thousands of columns on ventilation have been published and the public at large is clamoring for fresh air. To get this, all kinds of apparatuses are being manufactured and all kinds of advice is being swallowed. The public is opening the windows, sleeping on the porches and on the roofs, installing ozone machines, buying fans, installing ventilators and special ventilating apparatuses equipped with fans and air-washing machines. There is no mistake about it—the public wants fresh air.

Clay Ventilating Ducts.

Among the trades which are profiting more immediately by this public demand, there stands notably the sheet metal working trade. Sheet metal workers are working overtime, building sheet metal ventilating ducts, school houses and public buildings, and here presents itself the first of the opportunities I wish to consider. It seems to me that the clayworkers of the country could furnish clay ventilating ducts all ready for placing in position at less ultimate cost than the sheet metal ducts. These ducts also would have the advantage of being moisture proof and fireproof. So far, the ventilating ducts have been installed mostly in large public buildings, schools, hospitals, factories, etc. There is surely coming a time, however, when no residence will be complete without a thorough ventilating system. As houses are built today, the installation of ventilating ducts is not considered, because the rooms are already small enough and the ducts would present an unsightly appearance. New people and new architects are being born every day, however, and it can readily be seen that a residence can be planned having built within its walls vertical ventilating ducts, terminating in efficient ventilators at the roof. These ducts could advantageously be built of clay. They would have openings in their sides at each room, over which the ventilating registers would be placed and every room in the house would be vented, whether the windows were open or not. Such a system of clay duct ventilation does not involve any tremendous change in machinery or manufacturing methods.

Our hollow fireproofing industry has brought into existence an infinite variety of dies, through which flow clay columns in every conceivable shape and size, many of these dies being suitable now for the clay ducts of which I speak. We have the machinery, we have the clay, we have the manufacturing knowledge and skill—all that remains is to seek the market with the proper product for it. As we have at our command bureaus of publicity serving the various branches of the clayworking trade which are in constant touch with the best architects in the country, it should not be difficult through the co-operation of these, to be able to offer to the building public and the contractors of the country, tentative plans of residences containing ventilating systems of the type referred to.

I trust that some effort will be made to take advantage of what seems to be a decided opportunity for new business.

Construction of Septic Tanks.

A recent development along sanitary lines has been the construction of septic tanks for the disposition of sewage from houses which have not access to a public sewer system.

So far as I know, only one firm in this country has endeavored to present to the public a septic tank constructed of clay products made for the purpose.

This construction consists of large sewer pipe with proper base pieces; one compartment of the tank consisting of two sewer pipes, one on top of the other, and the overflow compartment of one sewer pipe. Special clay covers are also made for these clay tanks. This company has already done considerable business in septic tanks, and inasmuch as it is manifestly impossible for one company to fill the demand of the country, the success obtained should warrant clay-workers in going after this business in their territory in a similar fashion. Every country residence, every small village without a sewer system, all outlying suburbs, offer possibilities for business in this direction. Septic tank construction is not difficult to understand. The proportioning of the parts of such construction has been well defined by constant experimentation, and a study of sewage disposal system will assist the clay-workers, in ascertaining the possibilities of the business in his territory.

This article is not meant to be an exhaustive one on the many opportunities to the trade that may be grasped at this present time. It is merely of a suggestive character.

The Fireproof Chimney.

Before concluding, I would like to refer to one other point—the fire risks of the United States are from eight to fifteen times greater than those of any other country in the world. We are careless people. We are accustomed to obtain results regardless of the cost, but in case of fire, our losses are unduly heavy; the losses involving not only the destruction of property, but of human life. There is a demand for scientific chimney construction, especially along residential lines. Chimneys are built more or less haphazardly; they are often poorly proportioned and many failures of heating apparatus are due to such poor proportioning. I believe that it will be possible for clay-workers by co-operation with manufacturers of heating apparatus, to manufacture special chimney material and flue linings, to furnish the entire material for the chimney from base to top of an absolutely fire-proof character. Plans could be drawn and submitted and the entire product sold at a profit, its chief talking point being the elimination of fire risks from the chimney. Specializing along this line will undoubtedly bring the profits that have been acquired by specializing in all other trades. Many other opportunities might be enumerated here, but they may be found by a study of conditions and products in other trades. The clay-working industry has advanced by leaps and bounds in the last decade. It has had serious competition, and many of its competitors have gained their foothold in the early stages of the development of the industry before proper publicity methods were used. It is now up to us to retaliate and invade our competitor's fields, and once thoroughly aroused to action the clay industry will advance with amazing rapidity.

A CURIOUS EASTERN KILN.

Self-Burning Stone, Found in Holy Land, Contains Sufficient Petroleum to Burn It With.

A recent report from Hauran, in the Holy Land, tells of a curious stone, which is described by its finder as a "self-burning" limestone, which at the place where the travelers came upon it, lay in a stratum between ordinary limestone. It is of a grayish black color, and when freshly broken has a strong odor of petroleum.

The quarrying of the stone is easily done, with primitive picks and other tools, as the rock is quite soft and full of seams. The stone is broken into small pieces with hammers and piled up against a bank of rock.

A wall of the same material, about two feet high, is roughly laid up around the pile on three sides, making a pile of small stone eight to ten feet long and nearly as wide, and two feet at the front, rising to nearly three times that height at the back, where it lies against the bank.

Kiln of Self-Burning Stone.

In building the wall around the pile, small holes are left for draft and for starting the fire. When the kiln is ready to burn, a few small bunches of straw are placed in the holes mentioned, lit with a flint and steel, and in a short time the whole pile has ignited. Work on another kiln is then begun, while the other burns and cools.

After about twelve hours of burning, the stone has all been converted into lime, except the stones in the wall, and the very top layer, which are only about half burned. When cool, the lime is air-slaked and sifted, to remove any pieces not thoroughly burned, which are thrown into a new pile to be fired again.

The workmen told us that the kiln burned with a very black smoke and a bad odor, as of burning kerosene.

The lime is white and said to make a very strong plaster, superior to the ordinary lime, but sells at a much lower figure, because of the low cost of production.

If some one could devise a method of burning brick by saturating the clay with oil, a weighty problem would be solved.

WANT BRICK USED IN TUNNELS.

Contend That Clay Product Is Cheaper Than Concrete and More Lasting.

Engineer Nat Ellery, Joseph Phillips and other representatives of the Brick Manufacturers' Association recently appeared before the San Francisco Supervisors' Committee on Land and Tunnels to urge that their organization be given a chance to profit by the pending tunnel construction enterprises in that city. This would not be the case, they pointed out, if nothing but concrete was to be considered.

Taking the proposed construction of the Stockton-street tunnel as an example, Engineer Ellery submitted figures to show that if brick were used instead of concrete the cost of construction would be at least $30,000 less, and he contended that much less time would be needed for doing the work, and that the brick tunnel lining would be more permanent than would concrete work. Chairman Mauzy of the committee suggested that the matter was one that should be left to the engineering department of the city government, which suggestion did not seem to strike the brick men favorably at first, suggestions being made that concrete seemed to be a prime favorite in that bureau at present. In order that they might be given a chance without the city being put to any expense the brick men have made arrangements with Engineer Tuttle, who has had charge of the tunnel construction done in Los Angeles, to prepare a complete set of plans and specifications for a brick tunnel, ready to be submitted to contractors, and upon these they desired that the city would invite bids as well as upon others providing for concrete construction.

The committee thought this a fair proposition, and at their request the brick men agreed to put it in writing.

Turning Out Fine Brick.

The Schuylkill Pressed Brick Co., whose offices are located at Pottsville, Pa., is at the present time turning out some fine product, including a smooth face pressed brick, a rough texture brick and a colonial brick. The last named brick is burned extra hard and shows dark edges on the face. When laid up, it presents a rich appearance and reflects much credit on the manufacturer. These dry pressed brick are made of shale in a four-mold Boyd press and are burned in 30-ft. kilns, of which the company has five. The market is principally found in Eastern Pennsylvania, although some brick are shipped to New York City and other eastern points.

CLAY WINNING PROBLEM IN THE EAST

Constantly Increasing Haul, from Bank to Yards, Tends to Increase Manufacturing Costs—Traction Engine Solution of Problem

By ALLEN E. BEALS

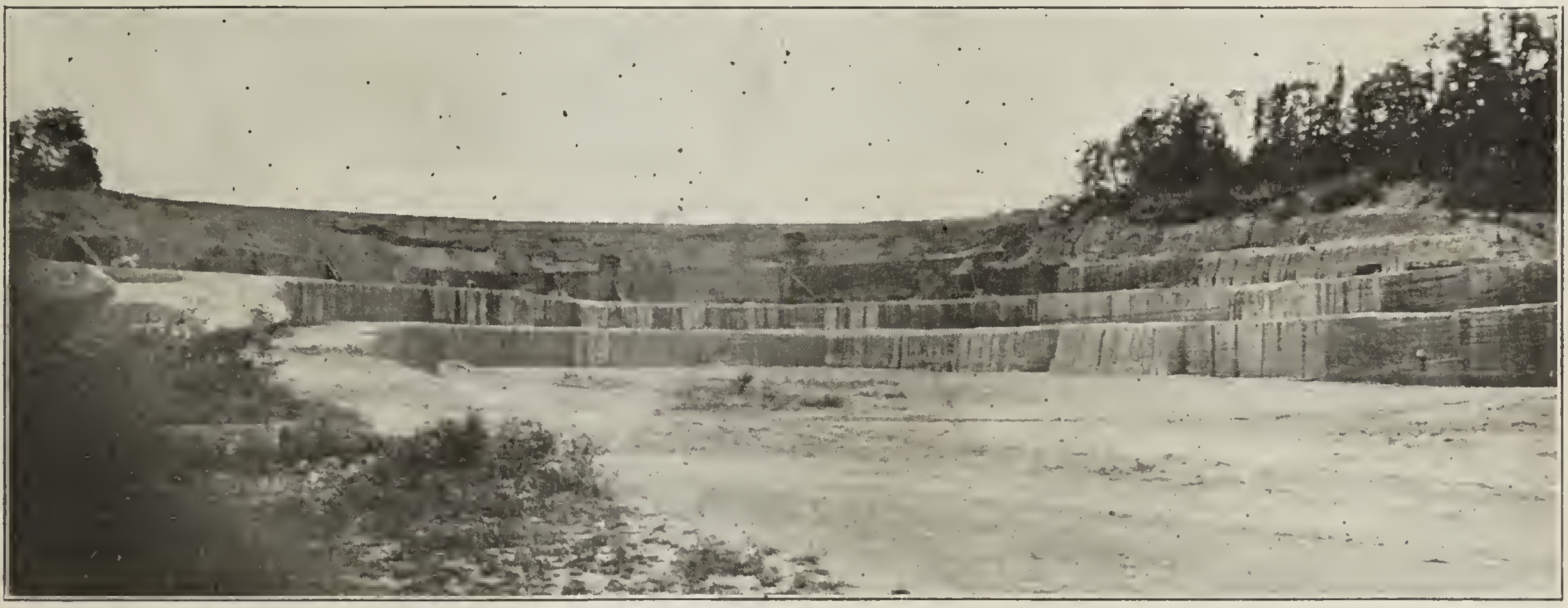
CLAY mining, as the term is generally accepted in the West and South, is almost an unknown factor in the brick making industry in the East. Clay is seldom mined in the Hudson and Raritan valleys. It is simply dug. Perhaps it would be more correct to say it is quarried, because, with few exceptions, the raw material for common brick, terra cotta and even front brick is won by cutting into clay breasts in much the same manner in the Hudson valley as marble is taken from the hills of Vermont and New York. In the Raritan valley, and, in fact, all through New Jersey, clay for commercial use generally is taken from pits, or from shale deposits where pick and shovel or steam shovel, with the use of blasting material, are the means adopted for procuring it.

Considerable attention has been drawn in recent years to the high quality of eastern brick and, this of course, brings into prominence the clay deposits from which the raw material for this important building commodity comes. There have also been heard at various times, rumors to the effect that the Hudson river clay deposits are being depleted, due, perhaps, to the fact that one or two Hudson river plants have partially abandoned their old clay deposits and have resorted to river dredging; that is, to delving into the bed of the Hudson river at Haverstraw and Croton Point for some of the rich blue clay that is known to form the bed of the stream for considerable distances.

The fact is that the clay deposits for the Hudson river valley are still sufficient not only for present day needs, but for generations upon generations of builders yet to come. In the New Jersey field, however, far heavier inroads, because of the great concentration upon the state's clay deposits, have been made in recent years, due to the location there of big terra cotta, (fire proofing and architectural) companies, brick plants and pottery and table ware manufactories, and clay conservation is even now, suggested as advisable, although the need is not in the remotest sense urgent.

The chief difference between Hudson and Raritan river, or central New Jersey, methods of clay winning is due to the fact that in the latter district the element of shale is conspicuous, while in the Hudson river district it is not so prominent.

Here the clay is dug from the base of the bank, backward from the river and sometimes the face becomes so precipitous as to make necessary the introduction of benches thus preventing slips and preventing the mixing of clay, if it be in strata. Haulage is by cart and horse, with here and there, an electrically propelled railway system. The process of loosening clay by plows and bringing it to the yard by scraper is rarely used today in the Hudson district. This method adds materially to the quality of pressed brick, but for common brick it is of little importance. Where this method is used, the deposit is shallow and extensive, and wheel scrapers are used where the haulage is not long enough to require a locomotive.



Clay Bank at the Rose Plant, Roseton, N. Y., Showing Benches or Galleries—Considered a Perfect Bank.

The clay is worked in benches, another name for galleries, where the breast is over twenty-five feet high. These benches are from 6 to 8 feet wide and 7 to 9 feet high. Roads lead up to the separate benches and the upper bench is worked in advance of the lower one. Frequently the presence of quicksand makes it necessary to plank these roads. If the bank is below water level there is an additional expense of pumping unless steam shovel-dredges are used. Owing to the extensive working for years, aye, generations, of some of the clay banks in the Hudson river valley, the use of the steam shovel is becoming more and more general.

Clay Dredging.

Where dredges are used, at Haverstraw and Croton Point, the dredge clay is dumped into hoppers, which, when full, are run up inclined planes on shore and dumped. Bank undermining is possible only in places where the clay is tough. Wedges are driven into the upper surface, a foot or two from the edge, at the same time the face is undermined by picking to a distance of two or three feet. It is rarely possible to pursue this method in banks more than twenty feet high and even then it is attended by so much danger that it is not universally practiced. Blasting is general in the larger yards.

Haulage a Serious Problem.

The haulage system followed in the lower end of New York state is becoming a very serious problem. The banks are being worked at constantly increasing distances from the yards with the result that the cost of manufacture has increased considerably in recent years. The same is also true of the Raritan river plants. In 1900, the average haulage distance was from 100 to 300 feet. Today, the distance may run to 500 or even a thousand feet, and yet carts and horses are still used almost entirely. The reason this apparently ultra-conservative method is still adhered to is because the character of the average Hudson river plant is such as to make frequent shifting of tracks necessary and this increases the haulage costs, it is said, considerably beyond that of the old horse and wagon method.

Thew Electric Shovel Working in Shallow Dry Bed.

Shale Pit at Yard 2, Bradford Pressed Brick Co.

In this connection, it is interesting to note that some attention has been given the matter of employing traction engines and cart trains in that territory of late, but the plan has not been thoroughly tried out in a sufficient number of cases to permit of comparative figures.

With the increasing distance between the clay banks and the yards has come the introduction, in some of the more progressive yards, of temporary tracks and cars drawn by horses or mules. Where gravity can be employed, this has proved an economical means of hauling clay, and the cost is placed slightly above ten cents a cubic yard for about 500 feet lead.

On the big yards, locomotive haulage has proved an economical means of transferring raw material from the banks to the yards. Only yards with a capacity of 15,000,000 brick or more follow this method, and even then, it is not universal. The cost by this method is about seven cents a thousand brick, figuring one and a half cubic yards of clay to a thousand brick for a distance of from 600 to a thousand feet, exclusive of depreciation charges.

Where the distance is short, wire rope haulage is used, but only in rare instances, and gravity planes are rarer still.

Shale Mining in New Jersey.

Cullen W. Parmelee, Director of the Department of Ceramics of the State of New Jersey, Rutgers College, who has made an exhaustive study of the clay beds of New Jersey, contributes to this article a description of the red shale of Middlesex County, where the big plants of the Sayre & Fisher Co., the National Fire Proofing Co., the Atlantic Architectural Terra Cotta Co., the Diddier-March Co., and other well known establishments are located.

The red shale which borders on the northwestern edge of the Cretaceous clay deposits of Middlesex County, New Jersey, is a part of the formation known to the geologists as the Triassic formation. This extends into the northern part of the state as far as the New York line and as far west as the Delaware river. It is of an earlier period of formation than the clay beds, as is clearly shown wherever the base of the clay beds may be seen in contact for there the clay rests upon the shale. This may be seen in several pits in Piscataway and Bonhamtown, near Metuchen, where the two beds are exposed during the digging. Thus the surface geology of this county may be divided into approximately equal parts of clay-bearing deposits and shale.

Motor Car Hauling Clay from Pit to Plant.

"The shales occur in a loosely compacted mass, which is for the most part made up of a very finely grained material, although more gritty material masses are found in some localities as well as harder strata. Weathering, particularly frost action, disintegrates the rock rapidly, yielding a sticky red soil which is easily tilled."

The shale is readily won by means of a pick and hand or steam shovel and it crushes readily in a wet or dry pan. In some localities where the Cretaceous clays and shales are in contact, it is difficult to tell where the one ends and the other begins, because when the clay beds were laid down the surface of the shales was worked over by the water which covered the region, mingling the disintegrated shale and clay into a finely grained plastic material. Such a deposit is worked by Mr. C. A. Bloomfield at Piscataway for the manufacture of fireproofing. This clay has been found to have high tensile strength in the raw state, and the tests show that it withstands a tensile strength test of 129 pounds to the square inch. It burns steel hard at cone 05 and vitrifies at cone 01.

"At Mr. Bloomfield's plant the shale, which is found underlying the clay, is used as part of the mixture. According to a memorandum at hand this material, (the shale alone), melts at cone 05. No difficulty is experienced in working the materials and good wares are obtained.

Thew Shovel and Conveyor Working in Pit of Streator, Ill., Paving Brick Co.

Shale Used in Dry Press Process.

"On the other side of the Raritan River, we find places where shale and clay are in contact as at Milltown. The Philadelphia & Boston Face Brick Co. has tried the shale experimentally by the dry press process and the sample tiles which have been seen by the writer were very good.

"Near Arlington, N. J., the shale is being worked in the manufacture of brick by the stiff mud process with good results.

"It would appear from the experience of those who are using the material alone or in part that it may be regarded as an available material for the manufacture of a variety of wares. Probably the widest range of usefulness will be found when it is properly mixed with more plastic and more refractory clays."

In all the state of New Jersey there are only a few localities, chief among them being Port Murray, Warren County and Kingsland, Bergen County, where shale is mined for clay products. The shale generally has to be loosened by blasting, and can then be loaded into cars and hauled to the works. This haulage is done either by cart and horse or by locomotive, depending largely upon the surface grades. In some instances, where shale is mixed with clay, steam shovels are employed.

Underground Clay Mining.

But in the winning of clay in New Jersey, mining constitutes a greater factor than in the Hudson valley district. Whenever the clay bed is covered by such a great thickness of overburden that its removal would be too costly, underground mining is resorted to. If the bed sought, outcrops on the side of a hill, a tunnel or shaft is driven in along the clay bed, but in case no outcrop is accessible, vertical shaft mining is resorted to, from which levels or tunnels are driven along the clay bed.

Underground clay mining has been tried with little success in the South Amboy districts, but shaft mining is followed along the Cheesquakes river where the overburden is very heavy.

Surface working is principally followed, picks and shovels being the method generally used, because it permits of segregation of the clays, according to the uses to which they are to be put. When this method is used, stripping is done and the various grades are permitted to weather in separate piles. In the Perth Amboy district and in Woodbridge, this method is largely employed.

In the Middlesex county district the better grades of clay are generally dug in small pits. These are commonly square and about ten to fifteen feet or more on a side, the depth being usually the thickness of good clay in the bed. Around Woodbridge, the miners commonly penetrate the No. 1 fire clay, or sometimes the extra sandy strata below, the depth being oftentimes determined by the character of the ground and the presence or absence of water underneath. Where there is danger of the pit caving in, the sides are sometimes protected in the weak parts by planking, held in place by cross timbers. The clay is dug by gouge spades.

At most other localities in New Jersey the clay is obtained from banks or large irregular pits, and the run of the bank or pit is commonly used. The method employed is usually that of the pick and shovel but in some of the very large plants steam shovels are employed, together with motive power haulage of either electricity or steam. At Lorillard, Keasbey, Sayreville and South river, steam shovels are employed almost entirely, blasting being resorted to when the breast is exceptionally hard and tough.

In the matter of haulage, wheelbarrows or one-horse trucks are used if the distance from the pit to the yard is not too great. But in most cases, the bank is such a distance from the yard that light tracks are laid and haulage is effected by means of industrial locomotives.

In Connecticut, Long Island and in the Bergen County district of New Jersey the methods of mining are very similar to those employed in the two districts heretofore described.

The constantly increasing haul, from banks to yards, due to the inroads being made upon clay deposits at all plants, has a tendency to increase manufacturing costs and it is evident that before very long, some extensive changes will have to be made in many plants by installing mechanical haulage facilities and it is probable that the traction engine will prove to be the solution of this important problem.

WEALTHY CLAY MAN BUILDS HOLLOW BRICK RESIDENCE

THE new hollow building brick fills a long felt want in modern construction work and the wonder is why some one did not think of it sooner. Being light, strong and waterproof, it has the added advantage of providing air spaces in the wall, providing against dampness and making the house cool in summer and warm in winter, and not the least of its advantages is the marked saving in freight rates, owing to its light weight.

The handsome residence which is being built at 69th street and Constance Ave., Chicago, by Wm. E. Dee, the well known sewer pipe manufacturer, for his own use, is a striking example of the use of this modern product of the kiln.

The home will be a roomy two-story building with an attic and will contain twelve rooms, four baths, sleeping porches, sun parlors, breakfast porches and all the modern luxurious and convenient appointments.

Wm. E. Dee Residence, Chicago, Ill., in Course of Construction, Showing Use of Hollow Brick.

The house will be the first one in Chicago to be constructed of the Dee hollow brick, which are a trifle larger than the ordinary brick, being 5x8x12 inches. They are made of shale and are corrugated on all sides, giving the mortar a strong hold and permitting the stucco to be applied directly on the outside wall and also the plaster on the inside wall.

For an 8-inch wall, a single course of these brick is sufficient, but for a 12-inch wall, a smaller brick 5x4x12 inches is used in connection with the larger one. For a 16-in. wall, two courses of the larger brick are used. The brick are laid so that the air chambers are in a horizontal position, thus creating a dead air space. These brick, owing to their extra size, may be laid at a decrease of about 25 per cent of the cost of laying ordinary size brick.

The exterior walls of the Dee residence will be finished in white stucco, and the roof of green glazed tile will add to the attractiveness of the building.

A two-story garage and stable with living rooms for the caretaker will also be built of the Dee hollow brick on the back of the lot. This building will be finished to correspond with the house, including a tile roof.

A landscape gardener will lay out the grounds and make an artistic setting for the home, which when completed, will cost about $26,000.

The Dee hollow brick is not only adapted for use in building high priced homes but is equally useful for workingmen's homes of moderate cost, a number of homes having been erected at a cost of $900 each for miners at Springfield, Ill.

COMMON BRICK STAND SEVERE U. S. TEST

Government Experimental Station at Pittsburgh Shows 6,580,000 Pounds Pressure is Necessary to Make 12-foot Column Crack

By a Staff Correspondent.

PITTSBURGH, PA., SEPT. 12.—It required a pressure of 6,580,000 pounds, to crack and partially break a brick column measuring 12 feet high and 47½ inches square at the Laboratories and Experiment Station of the United States Bureau of Mines and Bureau of Standards in the Arsenal grounds here today. This test was made upon the largest testing machine ever erected and the results are of untold value to the scientific and ceramic world.

The test was a special attraction designed as a part of the entertainment of the delegates to the Sixth Congress of the International Association for Testing Material and was under the supervision of Major Joseph A. Howard of the Bureau of Standards of Washington, D. C., assisted by A. V. Bleininger of the Ceramic Department and other assistants assigned at the Pittsburgh station.

Tests were made to ascertain the ultimate breaking strength of a solid column of brick and mortar. It was the largest column ever built or designed for such a purpose and was constructed from common brick made at the yards of the Booth & Flinn Co., Pittsburgh. The mortar was 1-1 or one part Portland cement and one part sand, a mortar that is considered considerably above the average. Constructed within the testing machine just 30 days previous to the test, the column had, it is declared, ample time to "dry out."

Several days before the actual test was made a pressure of 4,700,000 pounds was placed on the column. This later was relieved until the day of the actual test, when a pressure of only 1,500,000 pounds was registered on the Olsen testing machine. During these preliminary tests, however, deformation readings were taken at designated points on the column with a Howard strain gage.

Brick Last to Crumble.

While the brick in the column were declared to be nothing but "common building brick" ceramists asserted that a certain amount of vitrification was noticeable in the broken brick after the column had been "cracked" by the terrific pressure that had been placed upon it. It was shown during the test that the cement mortar "cracked" first and that the brick as a unit was the last to give way under pressure.

After the test was completed the solid column of brick was shown to have retained its greatest strength within its centre, the column breaking on the surface sides only. The compression was outward, the surface bricks falling as if a brick wall were being felled.

The Booth & Flinn Co. sent 7,500 shale brick to the testing station for this column. These brick were made on a stiff mud machine and fired to about 2,200. The manufacturers claim there was no vitrification in any brick used in this test.

The machine upon which the test was made is the largest testing machine in the world, was built expressly for the Pittsburgh station, and has a testing capacity of 10,000,000 pounds.

When the testing of such materials as brick columns and other structural materials was taken up at Washington, D. C., by the Government officials the character of a testing machine was taken into consideration and given much serious thought. The idea of the officials was to ascertain the strength in resistance and stability of materials used in Government construction. This matter was discussed at length between Richard L. Humphries, of Philadelphia, then associated with the Government and Maj. Joseph A. Holmes, chief of the Bureau of Standards.

It was at that time when the Pittsburgh station was being given considerable consideration, and it was agreed that a mammoth testing machine should be erected in Pittsburgh, at a considerable outlay, and it is said that more than $100,000 was spent and various testing machines were installed in a special testing building at the Pittsburgh Station. The machine accepted was designed by Tinius Olsen of Philadelphia, Pa.

Describes Construction of Machine.

"The demand for large testing machines, in the last few years, has arisen, owing to the large building construction and gigantic bridges now building and being planned," said Thorsten Y. Olsen, M. E., today in commenting on the test to a representative of "Brick and Clay Record." He added that the new methods of construction and the large use of reinforced concrete had much to do with it too.

"Column formulae, in the past, has been developed from tests made on small columns, the size depending upon the size of the testing machine available," continued Mr. Olsen, "and whether these formulae will apply to heavily loaded large columns is a question of the greatest importance and will no doubt, in the near future, be determined on the testing machine used today.

"This testing machine was designed by Tinius Olsen for the Structural Materials Testing Laboratory of the United States Geological Survey, now a part of the Laboratory of the United States Bureau of Standards at Pittsburgh. The design of the machine is unique, and in order to bring it within a reasonable cost, and at the same time obtain a great degree of accuracy, ease in operation and adjustment of large members, a special construction was necessary, differing from any other type of testing machine previously built.

"The machine was designed to test a 65 ft. column vertically, and has six feet in the clear between the tension screws, which will thus admit of testing exceedingly large columns as well as slabs, and, by placing an extension table on the lower platen, the largest beams made.

"This machine is now erected only in partial height to cover a column 25 ft. in height.

"The construction of the machine may be better described under six headings, as follows:

"First, Machine proper; second, The adjustment of the upper head; third, The pumping system; fourth, The weighing system; fifth, Method of calibration, and sixth, The guiding system.

"The machine proper consists of the two large heads, each weighing approximately 30 tons, together with the four straining screws, each 13½ inches in diameter. On the lower head is mounted the cylinder, ram and lower platen. The lower platen has a spherical seat on the ram, so it may be adjusted or leveled, as may be necessary.

"In the design of the cylinder and ram, one of the most vital points developed had to be considered—the type of packing to be used, which would hold the enormous pressure and in which the friction could be governed and controlled. To cover this point, a new form of packing had to be invented, and before using same in this machine, it was used in various small machines up to one of 1,200,000 lbs. capacity, and was found, in every case, to cover exactly what was wanted. This packing makes the friction against the movable ram a factor, which will vary directly with the pressure.

"The packing construction is such that no operator can alter it, and it is either effective, or if used up, absolutely useless, thus eliminating personal judgment as to tightening the packing.

Any Speed Required is Possible.

"The upper head is held on the long tension screws by four gear nuts, which are simultaneously operated through gearing and a large motor placed on the head, which raises it up and down to accommodate any length of column to be tested. Pressure is applied to the ram through the medium of a three-plunger variable stroke pump, operated by a 15 H. P. three-to-one variable speed motor. Pumps are mounted on the reservoir and the operating, reverse, safety and needle valves placed within easy control of the operator.

"As the pump stroke can be varied while in motion from ½ inch to 3 inches, and it is operated by a three-to-one variable speed motor, it may readily be seen that any possible speed can easily be obtained. A three plunger pump forces the oil past a small air reservoir and thence into the cylinder, so that a practically uniform application of the load is maintained.

"The weighing system is of special interest and novel, showing how easily and accurately this enormous pressure is weighed. It was not feasible to weigh the pressure on the main cylinder, so the pressure was transferred to a smaller cylinder, placed on the reservoir, and the pressure on this cylinder was weighed through the action of a lever system acting on a diaphragm placed in the smaller cylinder.

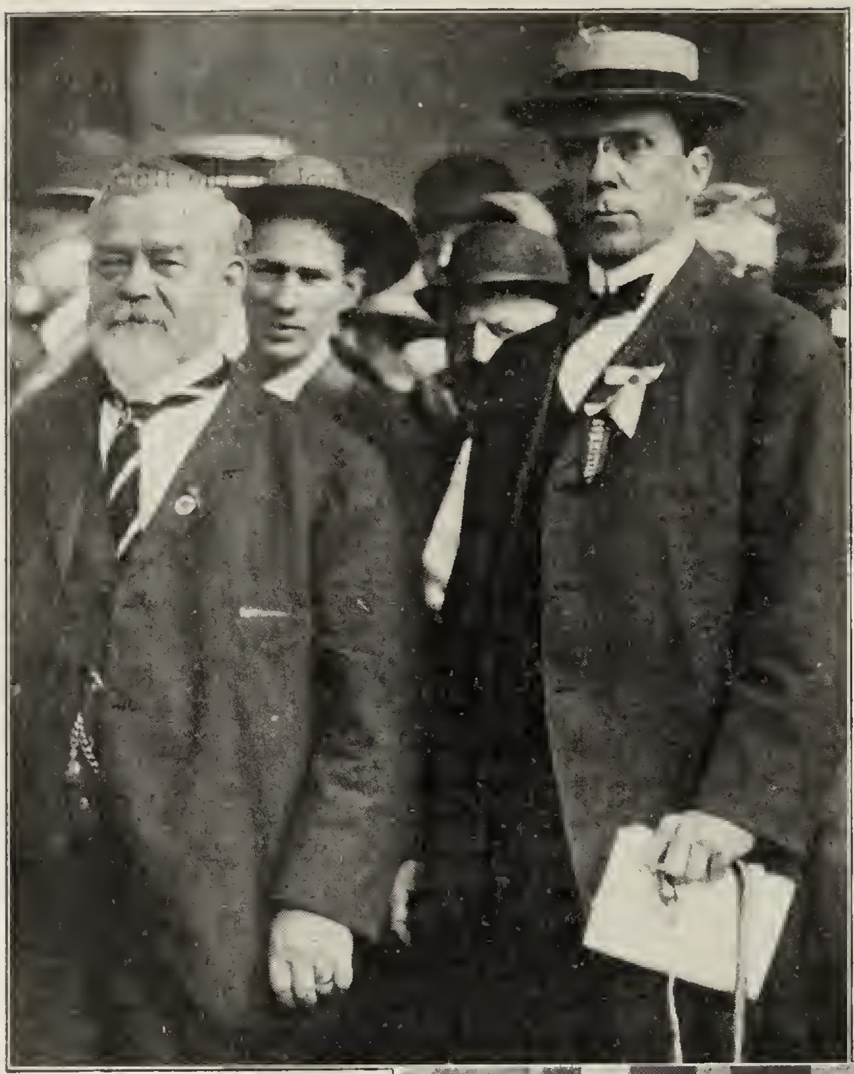
"The lever system terminated in a Standard Olsen dial vernier screw beam and a light pointer beam. The screw beam reads directly to 2,000,000 lbs. by 100 lb. marks on the dial, with end weights to 10,000,000 lbs., controlled by the hand wheel and indicator to the extreme right of the weighing system.

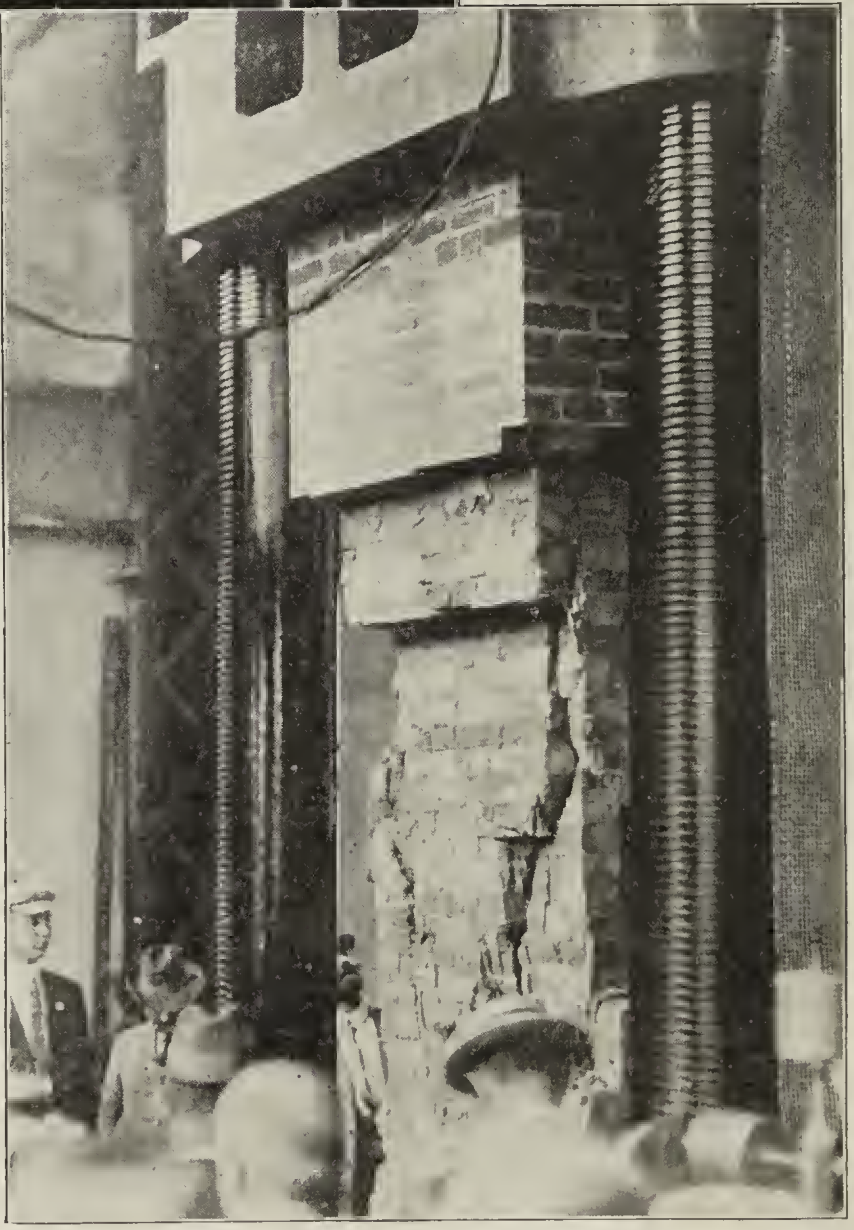
"The beam is also arranged so that the poise weight will travel automatically at various rates, controlled by both motor speed variation and a set of variable speed cones, so that, with a set rate of application of the load on the beam, the application of the pressure in the cylinder may be arranged to balance the pointer lever and keep it floating.

Makes Comparisons Easy.

"To calibrate the machine, the weighing system was standardized up to 10,000,000 lbs. by the use of standard levers and weights, so that the poise absolutely was correct for the portion of the load transmitted to it from the main cylinder. A specimen can be placed in the machine, noting the compression within the elastic limit and accuracy determined, or it may be compared readily with any other smaller lever machine, by the use of two specially designed diaphragms, through which the pressure can be transmitted. Such tests will check up closely with the calibration of the lever system, and any deviation can be corrected readily in the weight of the poise on the beam, the same as in any other lever testing machine.

"Guiding of the upper head is of itself an enormous proposition, espe-





The above pictures were taken by a staff photographer at the government test in Pittsburgh, Sept. 12. The upper picture shows Richard L. Humphries, of Philadelphia, who was the inventor of the testing machine used, and J. Tinius Olsen, the manufacturer of the machine. Mr. Olsen is shown at the left.

cially if the machine is ever lengthened to cover the entire height. This side thrust must be taken care of in the design of the building or tower and the staying of the machine to the tower. A guide frame connects the screws at the extreme top and is guided directly to the building, and at each corner of the movable head are shoes arranged so they may be stayed to the building at any set point allowing for the slight extension of the screws while under load.

"This machine covers all the desirable points for testing of large members and forms a type which will govern the construction of recording systems for all future large testing machines, and testing engineers can in the future look to the Bureau of Standards for data on tests of large members that cannot be obtained on any other testing machine built up to the present time."

COMPARATIVE COST OF FRAME AND BRICK.

Boston Chamber of Commerce Gives Figures Proving Brick Cheapest in End.

The report of the committee on fire protection of the Boston Chamber of Commerce included some very interesting figures on the comparative cost of frame and brick construction for dwelling houses. The conclusion was that the slightly greater cost of brick, which averaged under 10 per cent more than frame, was more than offset in a few years by the lesser cost of maintenance and insurance and by the greater comfort and durability of the structure. The report says that when lumber was cheap and brick was more expensive than now, the idea became general that the cost of brick as compared with frame was almost prohibitive, and this continues, although the conditions have changed so radically that the cost is now little more and the ultimate cost is less.

The purpose of the investigation was to encourage the use of brick and non-combustible interior construction for the purposes of fire protection, and this form of building was very strongly urged by the report. Bona fide bids were secured from five different contractors of good reputation on the cost of the construction of dwellings of brick, wood, cement and hollow blocks, the houses to be the same in every particular except the outer walls. Bids were secured on a modern eight-room house, of good design and excellent arrangement, such as is frequently built in and about large cities, and on these the bids of the five contractors varied comparatively little, and so the average was taken as a fair test of the practical cost, the contractors including their profits in all cases. The average bid for the various types was as follows, the second column showing the percentage of excess cost of each type over the clapboard type:

Clapboard	$6,759.95	.0
Shingle	6,868.80	1.6
10-inch brick wall, hollow	7,372.48	9.1
12-inch brick wall, solid	7,641.00	13.0
Stucco on hollow block	7,187.65	6.3
Brick veneer on hollow block	[illegible]	10.7
Stucco on frame	6,952.90	2.9
Brick veneer on boarding	7,226.44	6.9
Brick veneer on studding	7,153.98	5.8

The committee corresponded with contractors in various parts of the country in making up its report, and found from them that brick buildings were commonly estimated to cost 10 per cent more than frame, while brick veneered buildings could be put up in many sections for 5 per cent more than the cost of frame buildings, the difference in cost being usually more than offset by the lessened insurance premium. In the same way estimates were secured on annual cost of maintenance, including depreciation, for frame and brick dwellings, and it was found that the frame dwellings cost 26 per cent more for maintenance and depreciation than the brick dwellings.

Are you planning your exhibit for the Clay Show? It is none too early to begin now.

BRICK POPULAR IN NORTHWEST.

Progressive Spirit Shown by Modern Fireproof Buildings Erected in Western Cities.

Notwithstanding the vast stretches of timber in the Northwest, which affords an almost unlimited supply of lumber and the abundance of stone which is easily procurable, there is a growing demand for modern fireproof structures with the consequent increased call for burned clay products.

Many large office buildings in representative cities, such as Seattle, Tacoma and Seattle rival the world-famous skyscrapers of Chicago and New York, a notable example being the 42-story Smith building at Seattle.

Tacoma High School Building—Splendid Type of Modern Brick School House.

Brick is the favorite material, in the Northwest, as elsewhere for school buildings, that at Tacoma, shown in the illustration, is an exceptionally attractive one, being a decided contrast to the old adobe school houses of former days.

The Barrington brick manufacturers showed the proper spirit when they volunteered to bear the expense of replacing the brick that was not of the quality contracted for by the town of Brattleboro, Mass.

A section of a brick paved country road was shown in connection with the display made by the state highway commission at the Minnesota State Fair. Why not have a display at your state and county fair?

Elbert Hubbard recently voiced this timely advice: "Instead of hitching your wagon to a star, suppose you just get in touch with the good roads movement."

OVER TEN MILLION BRICK MADE IN 1911

Annual Output of Clayworking Industries Valued at More than $162,000,000—Decrease Shown in Some Branches—Marked Increase in Others

CLAY PRODUCTS decreased $7,879,793 in value in 1911, according to the annual report of the United States Geological Survey just issued. The entire production of the year was $162,236,181 against $170,115,974 in 1910. While decided increases are shown in several branches of the industry, including fireproofing, face brick, pottery and sewer pipe, it is significant that the decreases are among the most widely used products—drain tile, paving brick, fire brick and common brick, where the greatest foes of clay products, the cement and asphalt manufacturers, have shown the most activity.

The total production of common brick for 1911 was 8,475,277,000, valued at $49,885,262. Of this New York contributed the largest amount, namely, 1,143,726,000, valued at $5,918,286. Illinois was second in output, with 1,074,486,000, but the product had the greater value of $6,126,911. No other state reached the billion mark, Pennsylvania coming third, with 774,122,000 brick.

The chart gives the figures of production for other kinds of brick—vitrified brick, front brick, fire brick, etc.—as well as for terra cotta, drain tile, sewer pipe, stove lining, and pottery products. The production of all kinds of brick was more than ten billion.

In total production of clay products Ohio heads the list, with a value of $32,633,895, or one-fifth of the total for the United States; Pennsylvania is second, with $20,270,033; New Jersey third, with $18,178,228; and Illinois fourth, with $14,333,011.

The value of the brick, tile, pottery, and various other clay products made in Massachusetts in 1911 was $1,700,287. This is almost the exact figure of production as reported for the preceding year. The annual output in Iowa was valued at $4,432,874, which is a considerable decrease, compared with the figures for 1910.

The marvelous growth of the Good Roads Movement and civic improvement throughout the country has served to bring paving brick into greater prominence, and while the total quantity of paving brick produced in 1911 was somewhat less than in 1910, being 948,758,000 as against 968,000,000, the total valuation was advanced, however, from $11,004,666 to $11,115,742, showing a gratifying advance from $11.37 in 1910 to $11.72 in 1911, per thousand. In this branch of the industry Ohio ranks first with a total production valued at $3,200,475; Illinois second with a valuation of $1,627,683 and Pennsylvania third with a production valued at $1,511,061. The state of Maine, however, takes the lead in price received, the average being $24.74 per thousand.

The drain tile industry, one of the most important in the list, shows a regrettable falling off from $10,389,822 in 1910 to $8,826,314 in 1911, due, no doubt, largely to the dry season which prevailed throughout the country last year. Iowa, as usual, continues to head the list, showing an annual production of tile valued at $2,468,962. Indiana ranks second with a production valued at over two million dollars; Ohio comes third with a total of $1,684,420.

Notwithstanding the large quantities of concrete sewer pipe produced during the past year, the vitrified sewer pipe industry shows a gratifying increase, the total value of the product for 1911 being $11,454,616, Ohio taking first rank, its product being valued at $3,445,601; Missouri second with a valuation of $1,156,626; and California third, $999,546.

The growing popularity of brick for facing business buildings, private homes and public institutions is largely the result of the vigorous and progressive publicity campaign being carried on by the various face brick associations, as well as by individual firms throughout the country. The total production of face brick for 1911 was 724,911,000, as against 8,590,057 for 1910. The total production for 1911 is valued at $8,648,877, the average price per thousand being $11.93 in 1911 and $12.31 in 1910. Pennsylvania takes first rank in production of face brick with a total valuation of $2,111,492; Ohio comes second, its product being valued at $1,630,898.

The annual production of architectural terra cotta was somewhat less in 1911 than in 1910, the total valuation for 1911 being placed at $6,017,801, while the production for 1910 was valued at $6,976,771. Illinois ranks first, its total production being valued at $1,879,275. New Jersey is a close second, with a total of $1,669,973.

Fireproofing Shows Big Increase.

Owing to the growing demand for fireproof buildings and the extension of fire limits in cities and towns, there has been an unparalleled call for fireproofing. As a result, the total production of this commodity shows an increase in valuation in 1911 of over half a million over that of 1910. The total output for 1911 was valued at $5,660,172, while that of 1910 was $5,110,597. New Jersey leads the fireproofing ranks, its annual production being valued at $1,728,811. Ohio takes second place, with a total of $1,086,287.

The fire brick industry shows a set back of more than two million dollars, the total production for 1911 being valued at $16,074,686. The average price per thousand, however, advanced from $19.09 in 1910 to $19.86 in 1911. Pennsylvania was far in the lead in this industry, the total output being valued at over five and a half million dollars. Missouri, with an output of 86,945,000, valued at $1,763,548, ranks second. Ohio comes third, with an output valued at $1,539,450. The manufacture of stove linings seems to have been on the increase, the production of 1911 being valued at $614,116, showing an increase of over $100,000. Massachusetts takes first rank in this industry and Pennsylvania second.

The production of miscellaneous clay products, such as conduit, crucibles, chimney tops, glass house supplies, radial chimney brick and block, retorts, saggers, silo block, etc., shows a marked increase, the 1911 output being valued at $2,847,971.

The use of fancy and ornamental brick is increasing, the value of the output for 1911 being $1,215,880, showing an increase of more than $200,000 over that for 1910.

The total value of clay products in the leading states, during 1911, was as follows:

Ohio	$32,663,895	Iowa	$4,432,874
Pennsylvania	20,270,033	West Virginia	4,333,420
New Jersey	18,178,228	Washington	2,840,372
Illinois	14,333,011	Texas	2,659,919
New York	10,184,376	Georgia	2,636,380
Indiana	7,000,771	Kentucky	2,368,094
Missouri	6,274,353	Kansas	2,360,262
California	4,915,866	Michigan	2,083,932

CLAY PRODUCTION IN THE UNITED STATES FOR 1911 WITH CORRESPONDING TOTALS FOR 1910.

STATE	RANK.	COMMON BRICK.			VITRIFIED BRICK OR BLOCK.			FRONT BRICK.			FANCY OR ORNAMENTAL BRICK (Value.)	DRAINTILE. (Value.)	SEWER PIPE. (Value.)	ARCHITECTURAL TERRA COTTA. (Value.)	FIREPROOFING. (Value.)	TILE, NOT DRAIN. (Value.)	STOVE LINING. (Value.)	FIRE BRICK.			MISCELLANEOUS.[a] (Value.)	TOTAL BRICK AND TILE. (Value.)	POTTERY. (Value.)	TOTAL. (Value.)	PERCENTAGE OF TOTAL.	STATE.
		Quantity. (Thousands.)	Value.	Average price per thousand.	Quantity. (Thousands.)	Value.	Average price per thousand.	Quantity. (Thousands.)	Value.	Average price per thousand.								Quantity. (Thousands.)	Value	Average price per thousand.						
Alabama	17	129,694	$708,903	$5.47	21,444	$246,707	$11.50	9,169	$128,403	$14 00	(b)	$3,777	(b)		(b)			11,928	$183,375	$16 21	$16,221	$1,818,606	$28,498	$1,947,102	1.20	Alabama.
Arizona	44	10,249	90,282	8.81				(b)	(b)	19 63								(b)	(b)	60.00		106,882		106,882	.07	Arizona.
Arkansas	35	57,398	389,091	6.78	(b)	(b)	8.14	738	8,030	10.88		4,281			(b)			(b)	(b)	12 76		465,143	15,500	480,843	.30	Arkansas.
California	8	282,199	1,716,442	6.08	9,186	155,885	18.97	15,197	381,226	25.09	(b)	34,780	$999,546	$475,647	$200,923	$90,632	(b)	17,323	468,120	27.02	104.185	4,757,530	158,336	4,815,866	3 03	California.
Colorado	22	89,950	559,519	6 22	2,334	31,572	13.53	28,189	294,783	11.26	$1,220	23,655	297,800		(b)	(b)		8,057	182,766	22 68	85,096	1,566,638	40,073	1,608,709	.88	Colorado.
Conn. and Rhode Island	25	206,631	1,153,409	5 58	(b)	(b)	15 50	(b)	(b)	12.49	(b)					(b)	(b)	(b)	(b)	22 00		1,257,339	(c)	1,257,339	78	Conn. and Rhode Island
Delaware	41	20,158	165,225	8.20				(b)	(b)	19 80		(b)										200,810		200,610	12	Delaware
District of Columbia	38	25,225	187,690	7 44								(b)	(b)		(b)							227,520	(b)	227,520	.14	District of Columbia
Florida	39	36,207	218,365	5 98								(b)										217,535		217,535	.13	Florida.
Georgia	13	325,948	1.692,610	5 19	(b)	(b)	12.22	12,788	112,675	8.81		5,000	417,267	(b)	(b)	(b)	(b)	5,694	86,000	15 10		2,812,050	24,330	2,638,380	1.63	Georgia.
Idaho and Nevada	42	22,251	189,804	8 53				390	7,925	20.32								(b)	(b)	37.50		198,479		198,479	.12	Idaho and Nevada.
Illinois	4	1,074,486	6,128,911	5 70	124,623	1,627,683	13 06	19,786	240,135	12 14	10,281	1,372,049	507,694	1,879,275	552,994	(b)		18,285	286.039	14 83	48,272	13,353,200	879,811	14,333,011	8 83	Illinois.
Indiana	6	192,057	1,132,555	5 90	31,198	392,136	12.57	40,777	480,700	11 79	(b)	2,006,803	455,014	(b)	437,778	(b)	(b)	2,903	76,116	28.22	491,994	5,998,034	1,004 737	7,000,771	4 32	Indiana
Iowa	9	154,434	1,025,011	6 64	8,879	103,384	11 64	9,241	114,178	12 36	(b)	2,468,962	284,817		374,628	(b)					7,814	4,396,555	36,318	4,432,874	2 73	Iowa.
Kansas	15	183,809	694,586	3 78	83,337	823,505	9 88	27,887	213,711	7.66	(b)	35,875	(b)	(b)	15,257	(b)		(b)	(b)	20 10	197,667	2,360,282	(b)	2,360,262	1 46	Kansas.
Kentucky	14	107,771	692,378	6 42	(b)	(b)	12 37	8,972	90,330	10 07		64,005	(b)		(b)	292,583		52,074	890,810	17 11		2,254.000	114,094	2,368,094	1.46	Kentucky.
Louisiana	34	83,007	487,322	5.87				(b)	(b)	9.53		(b)									27,599	531,949	(b)	531,949	.33	Louisiana.
Maine	32	51,444	364,414	7 08	(b)	(b)	24 74	3,139	31,602	10.07		(b)	(b)					(b)	(b)	20.00		619,214	(b)	619,214	.38	Maine.
Maryland	18	160,229	999,791	6 24	(b)	(b)	16 98	757	10,574	13.97	(b)	8,048		(b)		(b)	$28,469	13,161	249,674	18 97		1,518,023	254,411	1,772,434	1 09	Maryland.
Massachusetts	20	166,834	1 079,778	6 47	(b)	(b)	11 00	(b)	(b)	18.00					(b)	(b)	167,802	1,856	70,104	35.86		1,471,761	228,526	1,700,287	1 05	Massachusetts
Michigan	16	252,465	1,301,998	5 16	5.597	78,336	14 00	2.498	31.572	12.64		313,072	(b)		(b)	(b)	(b)	(b)	(b)	18 08	(b)	1,953,442	130,490	2,083,932	1 28	Michigan
Minnesota	21	153.015	868,037	5 67	(b)	(b)	13 16	10,853	135,085	12.45		121,965	(b)		109,812	(b)		(b)	(b)	21 13		1,693,478	(b)	1,693,478	1 04	Minnesota.
Mississippi	30	92,431	584,960	6 33				1.012	11 020	10 89		65,196									3,000	664,176	23,660	687,836	.42	Mississippi.
Missouri	7	217,466	1,309,164	6 02	44.813	488.299	10 90	25,491	330,332	12.96	24,269	164.393	1,156,626	402,969	123,499	(b)	(b)	86,945	1,763,548	20.28	169,517	6,269,145	5,208	6,274,353	3 87	Missouri.
Montana	37	18,023	155,715	9 72				819	15,234	18 60		(b)	(b)		(b)			840	31,659	37.68		260,547	(b)	260,547	.16	Montana.
Nebraska	28	102,708	657,001	6 40	(b)	(b)	11 55	(b)	(b)	20 00		14,339			(b)						23,485	795,894		795,894	.49	Nebraska
New Hampshire	38	57,567	430,748	7.48																		430,748	(b)	430,748	.27	New Hampshire.
New Jersey	3	429,367	2,401,962	5 59	(b)	(b)	14 99	47,606	528.656	11 10	(b)	26,502	103,137	1 669,973	1,728,811	1,197,330	(b)	58,470	1,344,884	23 00	331,276	9,776,287	8,401,941	18.178 228	11 21	New Jersey.
New Mexico	43	12.416	101,034	8 14	(b)	(b)	11 35	753	11,380	15 11		(b)			(b)			1,041	25,054	24 64		174,651	(b)	174 651	11	New Mexico
New York	5	1 143,726	5,918.286	5 17	17.035	290,728	17 07	9.942	133,563	13 43	(b)	112,609	118,184	673,529	227,871	88,602	82,803	8,453	347,415	41 10	14,837	8,006.012	2,178,364	10 184.376	6 28	New York
North Carolina	24	178,235	1,076,183	6.04				(b)	(b)	9 81		11,704	(b)		(b)			(b)	(b)	13 85	2,300	1,271,570	8.556	1,280,126	79	North Carolina
North Dakota	40	15,288	108,691	7 11				(b)	(b)	17 28	(b)							(b)	(b)	24 37		210,816		210,616	13	North Dakota
Ohio	1	389,515	2,299,194	5 90	315.944	3,200,475	10 13	159.118	1.630.898	10 25	25,340	1.684,420	3,445,601		1.086,287	2,312,482	86,673	93,511	1,539,450	16.46	577,810	17,888,630	14,775,265	32,663,895	20 13	Ohio.
Oklahoma	29	102,013	528,287	5 18	18.535	201,100	10 29	2,551	24,703	9.68											2,549	758,639		756,639	47	Oklahoma
Oregon	27	66,267	533,652	8 05				(b)	(b)	26.43		69,857	(b)		(b)			(b)	(b)	26 15	485	1,081,025	(b)	1,081,025	67	Oregon
Pennsylvania	2	774,122	4.963.232	6 41	124,125	1,511,061	12 17	184.569	2,111,492	11 44	44,883	12,779	560,809	389,000	300,687	358,813	164,848	294,062	5,555,529	18 89	606,908	18,113,218	2,156,817	20,270,033	12 49	Pennsylvania.
Porto Rico	48	1.656	15,278	9 23	(b)	(b)	15 00					(b)	(b)		(b)	(b)	(b)					19,528	(b)	19,528	01	Porto Rico
South Carolina	31	103.788	624,103	8.01				900	10,400	11.55		(b)						(b)	(b)	14 47		663,674	6,120	669,794	41	South Carolina
South Dakota	47	5,621	42,297	7.52				(b)	(b)	10.94	(b)	(b)			(b)	(b)						61,365		61,365	.04	South Dakota.
Tennessee	23	144.824	842,864	5.82	(b)	(b)	10 41	9,547	94.733	9 92	(b)	51.721	(b)		(b)			1,365	15,915	11 66	700	1,187,961	197,139	1,385,100	85	Tennessee
Texas	12	255,811	1,596,763	6.24	(b)	(b)	15 92	19,331	297,847	15 41		12 817	(b)		47,038			4,918	78,230	15 91	49,830	2,527,502	132,417	2,659.919	1 64	Texas.
Utah	33	34,407	267,938	7 79	(b)	(b)	10 00	11,978	160,057	13 36		17,596	(b)		(b)			(b)	(b)	37 99	5,066	548,955	(b)	548,955	.34	Utah.
Vermont	45	9,561	55,702	5 83								(b)					(b)					80,466		86,466	05	Vermont.
Virginia	19	219,035	1,374,439	6.27				21,032	314 201	14 94	(b)	10,875	(b)					(b)	(b)	15 15		1 726,491	13,409	1.739,900	1 07	Virginia
Washington	11	99,588	695,100	6 98	(b)	(b	18 45	5,224	118,615	22.71	(b)	29,314	738,473	283,608	153,180		(b)	2,250	63,654	28 29	(b)	2,840,372	(b)	2,840,372	1 75	Washington
West Virginia	10	59,961	400,916	6 69	56,956	681,747	11 87	(b)	(b)	14 98		3,487	(b)		(b)	136,588		10,314	74,596	7 23	45,884	1 453,218	2,880.202	4.333,420	2 67	West Virginia
Wisconsin	26	151 331	985,824	6.51				9,920	100,140	10 09		58,547			(b)						2,028	1,149,539	8,600	1,158,139	71	Wisconsin
Wyoming	46	7,091	73,808	10 41				(b)	(b)	15 04												77,146		77.146	05	Wyoming.
Other States [d]					83,752	1.283,124	15 32	26 737	474.868	17 75	71 022	17,906	2,371,648	243,800	301,407	881,076	83.521	10,471	210,332	20 09	53,662	(e)	[f] 715,739	[f] 715,739	44	Other States
United States		8.475,277	49.885,262	5.89	948,758	11,115,742	11 72	724,911	8 648 877	11 93	[g] 1.215.880	8,826.314	11 454.616	6,017,801	5,660,172	5,356,184	614,116	[h] 809,504	[h] 16,074.686	19 86	2,847,971	127 717,621	34,518.560	162,236,181	100 00	United States
Percentage of total			30 75			6 85			5 33		.75	5 44	7 06	3 71	3 49	3 30	.38		9 91		1 76	78 73	21 27	100 00		Percentage of total
Total, 1910		9.221.517	55.219.551	5 99	963.000	11,004,666	11 37	697,857	8 590,057	12 31	[i] 1.011,730	10 389.822	11,428.696	6,978,771	5,110,597	5,240,644	503.806	[j] 922,209	[j] 18,111 474	19 09	2,743.482	136,331,296	33.784 878	170,115.874		Total, 1910

CORRECTION—Amount of vitrified brick or block in State of Washington should be 40,291,000, valued at $743,352.

[a] Including adobes, burnt-clay ballast, charcoal furnaces, chimney pipe and tops, conduits, crucibles, flue lining, gas logs, glasshouse supplies, grave and lot markers, muffles, radial chimney brick, and block, retorts, saggers, scorifiers, semienameled brick, silo blocks, vases and ornaments, and wall coping. [b] Included in "Other States."

[c] Made by Connecticut alone, and included in "Other States." [d] Includes all products made by less than 3 producers in 1 State.

[e] The total of "Other States" is distributed among the States to which it belongs in order that they may be fully represented in the totals. [f] Undistributed pottery products.

[g] Includes enameled brick valued at $1,038,865, made in the following States: California, Illinois, Maryland, Missouri, New Jersey and Pennsylvania.

[h] In the total quantity and total value of fire brick are included, respectively, 104,483,000 silica brick, valued at $2,520,816, of which 74,674,000, valued at $1,525,086, was produced by Pennsylvania, and the remainder, 29,809,000, valued at $995,730, by Alabama, Colorado, Illinois, Indiana, Missouri, Montana, and Utah.

[i] Including enameled brick valued at $832,225, made in the following States: California, Illinois, Maryland, Missouri, New Jersey, and Pennsylvania.

[j] In the total quantity and total value of fire brick are included, respectively: 145,779,000 silica brick, valued at $3,289,028, of which 112,033,000, valued at $2,231,063, was produced by Pennsylvania, and the remainder, 33,746,000, valued at $1,057,965, by Alabama, Colorado, Georgia, Illinois, Indiana, Missouri, and Montana

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. SEPTEMBER 15, 1912 No. 6

FOOD FOR REFLECTION

Government Geological Report Shows How Clay Worker Has Taken Things Easy While His Foes Were Up and Doing all the While

Mr. Clay Worker, we sounded a warning to you in the September 1st issue of "Brick and Clay Record." We told you that you were sitting idly by and PERMITTING THE COMMON ENEMY TO WALK AWAY with the business that RIGHTFULLY BELONGED TO YOU. We urged you to ACTIVITY. We suggested that you should "FIGHT the devil with his own fire"—organized publicity.

Some of you took the warning seriously. Many of you smiled and let it go at that. This latter class we ask: WHAT YOU THINK ABOUT THE COLD, DISPASSIONATE FIGURES to be found elsewhere in this issue—the annual report of the United States Geological Survey which was issued this past week?

This report tells you CLAY PRODUCTS DECREASED MORE THAN $7,000,000 IN 1911. It tells you that the greatest decrease was IN PAVING MATERIAL, IN BUILDING MATERIAL AND DRAIN TILE—THOSE BRANCHES OF THE INDUSTRY WHERE THE CEMENT AND THE ASPHALT MAN, your two greatest foes, SHOWED THE MOST ACTIVITY. It shows you that the INCREASES were among those branches of the industry where the clay product manufacturers WERE THE MOST ACTIVE IN ASSOCIATION WORK—in face brick, in fire proofing, in sewer pipe and in pottery.

Another significant fact is that in Ohio, where the paving brick people are THOROUGHLY ORGANIZED, we find vitrified brick SHOWS A DECIDED INCREASE, but that in the rest of the country, where little organization is to be found, THE DECREASE IS SO GREAT as to overshadow the advance made in the Buckeye state.

Read over this report Mr. Clay Worker. Digest every figure given you. There is food for reflection there.

LESSON OF THE CANNERS

The canners of the United States have realized the necessity of co-operation. Profiting by the experience and the success of other great industries they have organized into an association that covers the entire field.

And they haven't stopped with simply organizing but THEY HAVE LAID BIG PLANS and they are BACKING these big plans with DOLLARS.

With the work that has been outlined and the spirit that is back of that work the canners ARE GOING TO REAP A HARVEST that will make the pocket book of every canner in the land bulge.

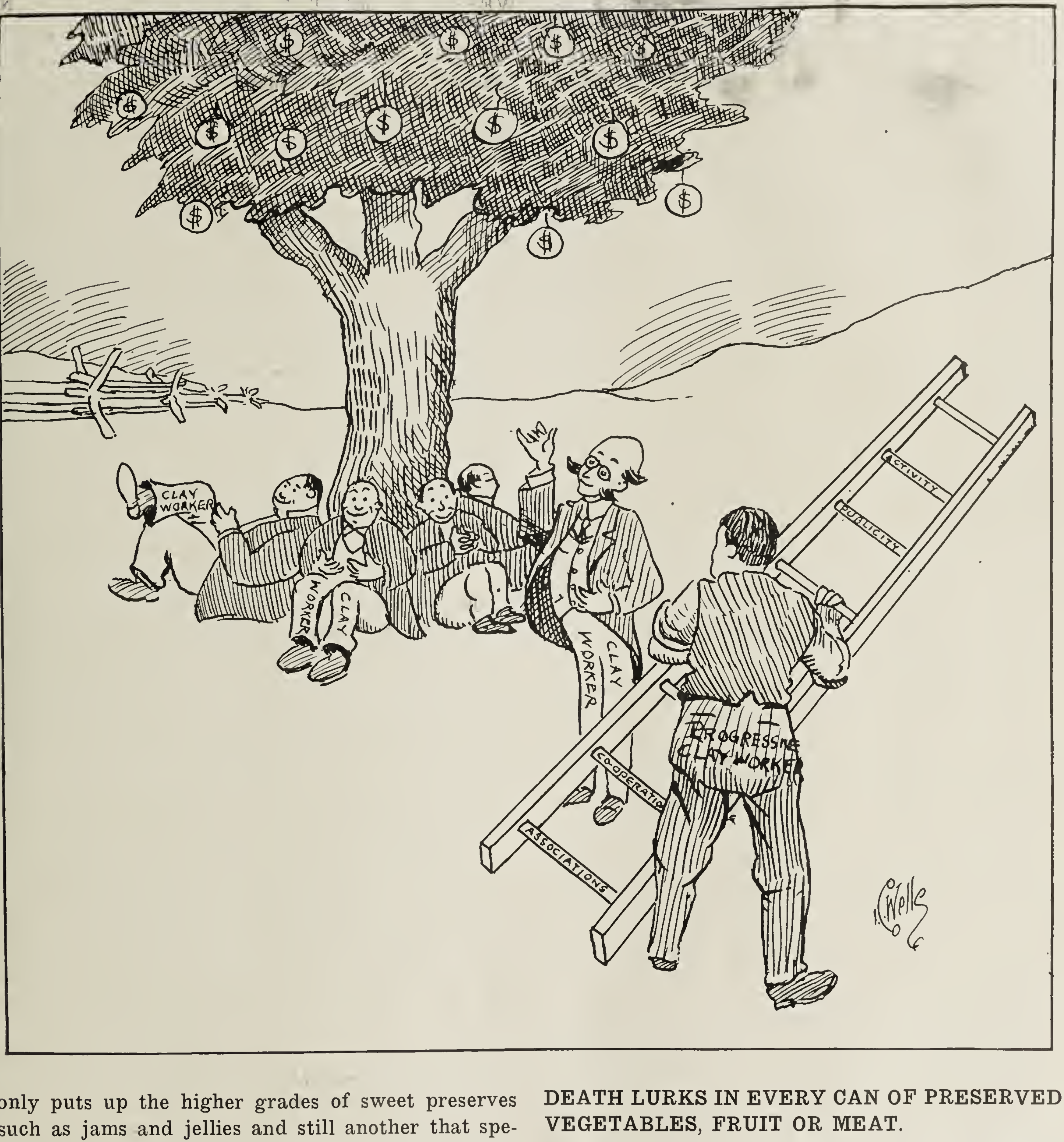
The canners haven't gone about the work niggardly. THE BIG FELLOWS AND THE LITTLE FELLOWS GOT TOGETHER and they agreed on a general plan to be followed and then they reached down in their pockets and THEY GAVE FREELY.

Before another six months have rolled around this great campaign will be in full swing. Before another year is closed the buying public will know all the advantages of using canned goods and whatever doubt there was about the economy and the safety of using this product will have been wiped out by a great educational work.

The canners' case has many problems similar to those that confront the clay product manufacturers. Like the clay product industry there are many branches. There is the fellow that makes a specialty of canning vegetables. There is another that devotes his energies to preserving fruits, and still another meats. And even in these special fields there are those that specialize.

For instance, one factory devotes most of its energy to making a special brand of baked beans or another to making soups or still another to putting up a particular fancy brand of spaghetti. Then, among the fruit canners you will find a factory that

SITTING UNDER THE TREE



only puts up the higher grades of sweet preserves such as jams and jellies and still another that specializes on canned peaches and the heavier fruits.

You can see by this there are varied interests among the canners and necessarily there must be many small fellows and a few big fellows.

Still, with all these different interests, the canners figured that prosperity for one meant prosperity for all and **THEY GOT TOGETHER.**

Like the clay product manufacturers, the canners have a **COMMON EVIL** to fight. With the clay product man this evil is the **CEMENT BOGEY.** With the canner it is the **MISTAKEN IDEA THAT DEATH LURKS IN EVERY CAN OF PRESERVED VEGETABLES, FRUIT OR MEAT.**

This bogey of the canner is a serious one. It is one he has fought as an **INDIVIDUAL** for many years. Perhaps at one time ptomaine poison did lurk in an occasional can of preserved food, but this was when the industry was new and the care that is exercised today in sterilizing the cans, in handling the product hygienically, in keeping everything clean was unknown then.

Improved machinery and methods have eliminated ptomaine from the preserved foods and it is a fact that a can of meat that has been handled by machinery from start to finish, absolutely free from contaminating influences, and in an atmosphere that is sterilized and free from germs is **FAR SAFER** than the meat **YOU BUY FROM YOUR BUTCHER** who **HANDLES IT WITH SOILED HANDS**, lays it on a wooden block whose surface is covered with particles of decomposing animal tissue and a collection of dirt and filth, and who is **NOT PARTICULAR** when he places your purchase on the germ-laden scale to be weighed.

While all this is true the **BUYING PUBLIC DOES NOT THINK OF IT.** It still clings to the vivid impression **FORMED YEARS AGO** when the canner was not any more particular than the butcher is today and when he handled his product by hand instead of by sterilized methods and improved machinery.

The canner must first combat this evil and is going about his work in the only consistent way—through association work.

Only recently the canners organized, but already the first part of the big campaign, although in its infancy, it being put into motion. Two Sundays ago, readers of the great daily papers possibly recall seeing in many of the magazine sections of their favorite paper nearly a full page devoted to the subject of ptomaine poison in canned goods. The article was written by a well known scientist and there were pictures and tables to emphasize the point brought out.

This article is only one of many that will flood the daily press of the country before another year has rolled around, and it is safe to say that such a campaign surely will drive out the fear from the minds of the great buying public that poison exists in canned goods.

But this is only a **PART** of the great campaign the canners have in mind. Of course, first **THEY MUST SHOW THE FALLACY** of the ptomaine bogey, and by **DOING THAT** they pave the way for a further campaign that **WILL CREATE A DESIRE TO BUY** canned goods.

Having secured the confidence of the people, the canners expect to show the advantages of buying canned goods. They not only will harp on the convenience of canned fruits and vegetables but they will harp on the cleanliness and the safety of their product.

And, then, while creating a demand through this great educational work, they will at the same time take up the question of manufacture, of delivery, of salesmanship, of transportation—in fact the best methods to be employed for the advantage of the entire industry.

The canners are not going about the work in a half-hearted way. They have realized from the experience of years that they can not expect to bring about the results hoped for by **INDIVIDUAL EFFORT.** They know they **MUST PRESENT A UNITED FRONT.** They know **THEY MUST DIG DOWN IN THEIR POCKETS AND FOOT THE BILLS.**

The Clay Worker should see in the canner and his plans for the future a **GREAT LESSON.** This lesson is none other than co-operation—organization—association or team work. You, Mr. Clay Worker, have an advantage over the canner because you already have good organizations representing many of your interests. All you need then is **TO SUPPORT THESE ORGANIZATIONS.**

Sit down today, Mr. Clay Worker, and write to the secretary of the association that represents your interests and tell him you **WANT TO JOIN HANDS** with the progressive clay workers of the nation. Tell him to **ENROLL YOU** among this band of hustlers and that **YOU ARE WILLING TO PAY YOUR SHARE** of the expense. When you have **DONE THIS** you will have **STARTED** the ball rolling **TOWARDS** prosperity among the clay workers.

THE MAN UNDER THE TREE

Some clay workers are prone to **SIT UNDER THE TREE** and wait for Mr. Other Fellow—their more progressive brother, to knock down the plums.

This plan, they argue, doesn't tax **THEIR** resources, nor does it require an expenditure of energy, and they **GET SOME OF THE PLUMS.**

Looking at the matter, from an entirely selfish viewpoint, the plan works admirably on the face of it, even if it is unfair to Mr. Other Fellow.

It stands to reason, however, that whatever **IS** unfair to Mr. Other Fellow **WILL NOT WORK** out to the **ADVANTAGE OF ANYONE** in the long run.

Mr. Other Fellow may take his ladder uncomplainingly and climb the rungs of Activity, of Progress, of Co-operation and Organized Publicity and reach up into the very topmost branches of the tree, knocking down the plums of Business and **EVEN MAY PERMIT YOU TO SHARE** in the fruits of his toil for a time without a grumble, but don't you believe he soon will tire of this **ONE-SIDED GAME**—don't you believe he will become discouraged?

Sitting under the tree is a short-sighted business policy, Mr. Clay Worker. True, you get **SOME** of the plums and you are **AHEAD** of the deal in a way, but wouldn't it be fairer to Mr. Other Fellow—fairer to yourself—wouldn't it be **MORE PROFITABLE TO BOTH,** if **YOU GOT A LADDER AND WENT TO WORK WITH HIM?**

The progressive clayworkers are the ones that keep up with the spirit of the times. They are constantly on the alert for new ideas, new methods of making products cheaper, better and more economically, and they are the ones that usually are found **CARRYING THE LADDER.**

Become a Progressive, Mr. Clay Worker. Don't sit under the tree. Join your associations. Co-operate with your fellow clay workers. Work for a **COMMON** cause. Unselfish as this may seem to be it is **MORE** for **SELF** in the long run, because unselfishness in business is like unselfishness in everything—profitable eventually.

Are **YOU** sitting under the tree?

No general ever went into a battle and won it, with a divided army.

Cement products increased 700 per cent in ten years while clay products only increased 50 per cent in the same period. The one was accomplished under systematic team work—the other with a divided army.

If it wasn't for the **NATURAL** advantages the clay industry possesses over all its rivals, the progressive spirit of its foes would relegate clay products to the shelf. Persistent publicity—consistent co-operation has put cement where it is today.

One of the great cement manufacturers appropriated $450,000 as his **PART** of a general campaign for publicity work for **ONE** year. Is it any wonder that cement has made such inroads on clay products? If the cement manufacturer sees the value of organization and the clay product manufacturer does not what is the answer?

Looking at the matter from a **SELFISH** viewpoint you owe it to yourself to join the association that represents your particular branch of the industry. Nothing appeals to a business man like **DOLLARS.** Investigate the subject of association work and see if you cannot figure out the dollar-end of it.

JUST TO REMIND YOU—

that "Brick and Clay Record" Want Ads bring big and definite results, because they reach practically every Wide-awake Clay Manufacturer in the country.

No other known medium of reaching the Clay Field compares with "Brick and Clay Record." Hundreds of successful users of our Classified Ad Department testify to the winning power of this economical but effectual means of Buying or Selling Second-Hand Machinery—securing Help or Positions—Buying or Selling Clay Lands and many other good business deals which have been brought about by its aid.

Why not place an Ad in our October 1st issue? Rates, $2.00 per inch.

SOME "GET TOGETHER" ECHOES

Here is the Way the Opening Gun Editorial in the New Campaign to Arouse the Clayworker to the Sense of His Duty Makes the Reader Feel

The "Get Together" editorial in the September 1st issue of "Brick and Clay Record," printed as an opening gun in the big campaign this magazine has begun, to awaken the clayworker to the sense of his duty to the industry as a whole, has brought many letters of commendation from readers. We are able to print only a few, but expect to give space to every one received in subsequent issues.

This letter, from President R. L. Queisser, of Queisser-Bliss Co., of Cleveland, Ohio, manufacturers of brick, terra cotta and builders' supplies, is the first letter that came in our mail and suggests an editorial and cartoon on another page:

> Hurrah for you and the good work you have just started. Your five-page editorial in the September number is certainly a corker.
>
> While the subject is not new, yet it cannot be hammered at too much. The clay man is his own worst enemy and his procrastination in this matter is costing the industry millions in money and lost prestige every year. Your splendid exposition of the matter should surely do some good, but the trouble, as I find it, is that there are too many men in this business willing to let the "other man" shoulder the burden of responsibility and expense and stand ready with the open basket to "catch the plums when the other shakes the tree." They do not seem to appreciate that this negligence and apathy is costing them personally considerable money.
>
> Many of them say they are now running capacity, which may be true, but they are not running capacity at their best selling prices. The majority are simply trading dollars. They fail to see that with increased demand, though they do not increase their capacity, they could increase their prices and make money, while now they are simply doing a little better than breaking even.
>
> You are to be congratulated on the stand you have taken, on the work you are doing, and I wish you unlimited success.

G. H. Tefft, secretary and treasurer, of the International Clay Products Bureau, of Kansas City, Mo., gives hearty approval to the spirit of the "Get-Together" idea, but takes exception to the oversight in not mentioning the sewer pipe interests in a more specific manner. "Brick and Clay Record" accepts this friendly criticism and assures Mr. Tefft the slight was unintentional, as the spirit of the editorial plainly shows. The sewer pipe people will have no occasion to complain at the treatment this magazine promises to give that branch of the industry in its future issues. The letter follows in full:

> We have read with great interest and hearty approval your editorial on the subject of getting together. We are terribly peeved at you bcause in the whole course of the article you have mentioned almost every other branch of the clay industry except sewer pipe, although we have one of the best and most active associations of them all.
>
> However, we are not going to allow any petty feeling of jealousy to prevent us from telling you how much we concur with the general sentiment of the article, but we cannot refrain from reminding you that one of the reasons it is so hard to get the little fellows in and, in fact, everybody in, is because of little preferences and favoritisms of just this sort. We find it very hard to please all the members of our own bureau, and whenever anybody talks brick and tile and doesn't talk sewer pipe, we find we are just as touchy as any of them. However, this is beside the main issue.
>
> We have bulletined everybody on our list, and asked them to read the editorial, and have told them "Hooray" and "Amen."

John Berwald, of the Davenport Brick & Tile Co., of Davenport, Ia., is an enthusiastic indorser of the "Get-Together" spirit and proves he is sincere by the fact that he is a member of several associations which work for a common cause. Mr. Berwald, however, misinterpreted a portion of the editorial because we had no idea of suggesting any particular plan for the clay workers to follow. It seems that a proper support of the associations already formed is what is needed just now. Given that the clay product industry will boom. The letter follows:

> Your editorial on pages 176 to 180 in the issue of September 1st is great and grand. We hope that this strong appeal will bring the right results. To be candid, must say that the last part of your article could be a little clearer. The way I construe your article is that another association outside of the building brick and paving brick associations should be formed and this association then to fight for brick in all its different branches.
>
> We certainly agree with you on this, as I personally had it in mind that providing I went to the next Iowa state brick convention, I was going to make a proposition as Mr. Ransom did in 1909 at the Mason City convention, and that is to raise a fund for brick advertising and get out in a general way on brick, showing where the face brick excels all other material; the paving brick excels all other paving material; the hollow block excels concrete, and the drain tile not being affected by acid, etc., excels its rivals. In fact, it was my idea to educate the public and induce it to use brick wherever brick can be used.
>
> It is my idea also that all brick makers pay in either on the plan suggested by J. Parker B. Fiske or Mr. Platt of Iowa, on the drain tile question. We, as one, will be willing to join hands as we did with the great product association when it was formed at Rochester, N. Y., in 1909, and with the Iowa Drain Tile Association, in a state where our drain tile does not amount to a drop in the bucket. It might be added that we are also members of the Iowa State Brick Association.
>
> Hoping and wishing that you will have a grand success with your idea, which is certainly along the right line, I am, yours truly.

C. B. Platt, secretary of the Iowa Brick and Tile Association, with offices at Van Meter, Ia., not only indorses the campaign, but makes some valuable suggestions. His letter in full follows:

> I observe your proposed campaign to awaken the clay products manufacturers to the necessity for supporting the associations properly. I am glad that you are taking it up and wish you success.
>
> I suppose you will not be opposed to some confidential remarks bearing on this matter. I offer them only as a suggestion and without criticism of what has been done, and further with faith in the probable right course you would follow.
>
> To start my observations I wish to say that I do not altogether blame the manufacturers for their lack of interest in associations. I believe that it will indeed be a strenuous campaign that will awaken them.
>
> Associations are at present not definite enough in their motive. They are not closely enough associated (that is, cover too much ground in territory and membership qualifications), and they are not properly conducted.
>
> These statements are made not in criticism of those who have conducted association work, for much credit is due them, because they have indeed worked under big handicaps.
>
> What I mean is there should be a purely social national organization, if you please, such as we now have, which mixes the whole fraternity and the people who supply them with tools, into one unwieldly organization, except from which to gain pleasure. Such an organization is all right but it should not be considered seriously at all, as far as benefits otherwise are concerned. From it may possibly spring good working organizations but such should not be national in scope if they would gain universal support.
>
> In a working organization, though more liberal in their support, the machinery and supply houses really have no place. Boiling it down further, the individuals of a concern should lose their particular identity in the membership. Membership should stand for the soulless part of the business—or be the concern as a producer and this membership should be considered as much a part of the equipment or resources of the plant as the engine or clay bank. It should in other words be a working tool, recognized as such all the time and taken care of and watched as closely as the equipment.
>
> To reach such a condition of consideration, the association must be rebuilt, or at least jacked up and underpinned with a vitrified clay foundation.
>
> First, is the field. An association should exist within competitive territory and be restricted to such territories as have a certain amount of capital invested. It is plain that the building division has less of a territory (in the common materials), than paving brick, yet a division line could be worked out for all and when once established would become without effort, a palpable restriction against undue competition. The cost of membership should depend upon capital invested. Association support is a tax and when a taxpayer doesn't see results he kicks and if he could, he would stop paying taxes. He can stop supporting an association and he does with regularity or irregularity. He must be assured that he cannot afford to discontinue its support, as you recognize.
>
> I think I know the clayworker pretty well, as a rule, and I believe he must be confronted with a fact and not with a theory.
>
> The association formed cannot live without attention. To be made a going-thing it must have expert attendance, the same as a machine. It is therefore useless to attempt to run it with other than trained secretaries. Such, of course, cost money, yet they are in connection with their regularly maintained office, with no other work in it, a constant reminder to the manufacturer that there is a live, moving thing demanding his attention and support.
>
> It is not necessary to dwell further on this subject and while my remarks have of necessity been general, I know you will catch the drift of my idea. In the main it is that an association should stand for something. A membership would signify that the holder produced a worthy material. Associations must be protected from suspicion on the part of the membership that its benefits are not mutual entirely; that there is no chance that one member be more benefited than another, etc. I do not see much good in a general association except in the nature of publicity work unless it is in states that have no separate organization. In such cases the clay products manufacturers should join in order to take advantage of the influence possessed by an organized body in looking after legislative matters, freight questions and the like.

CLAY MEN LEARN LOCAL PUBLICITY VALUE

In an effort to show what the individual is doing towards creating a demand for clay products in his particular locality "Brick and Clay Record" reprints a number of advertisements taken from various sections of the country.

If every clay product wanufacturer in the United States were hammering away along the same line what an interest would be created everywhere!

WITHOUT well-planned publicity, persistently followed, no small manufacturer ever has grown into a big manufacturer nor has a large business survived long.

Publicity is as essential to trade as is any other one part of the organization that makes a product possible.

One hundred years ago a man could step to his door and, if he possessed a lusty voice, attract all his possible customers, but not so today. The country has grown. Where small villages existed, then, cities with their thousands have sprung up. The town crier is a thing of the past and printers' ink has taken his place.

The buying public has become so accustomed to depending on public print for its information no progressive merchant—whatever his wares—thinks of conducting his business without first planning a publicity campaign. He realizes he must let the people know what he has to sell, why it is worth selling and what it sells for.

SOME HELPFUL AIDS IN CREATING LOCAL DEMAND

"When You Build, Use Brick"

A man in Cleveland wanted to build a home.

His grandfather and his father built their homes of wood, so he had not thought of any other material. He had about $5,000 to spend for the residence.

One day his contractor got busy with the lead pencil and showed the man that he could build a house of brick for about $400 more than the frame house. They figured out the cost of insurance, repainting and repairs and it showed as plain as the nose on the man's face that at the end of about three years the Brick house would not cost one cent more than the Frame house would have cost.

The result was that the man built a Brick house. It is not depreciating as a frame house would, and if he ever wants to sell it he will be able to get much more than he would for a house of wood. He doesn't have to worry about it burning down and endangering his family while he is away. It takes less fuel to heat it in winter and is cooler in summer.

Will you learn something from this man's experience, or will you keep on in the old rut?

Let us prove to you that a house of brick costs no more than a house of wood when repairs, insurance and cost of heating are taken into account

Think of the Future—Build a Permanent House

The Cleveland Face Brick Association

The Cleveland Builders' Supply Co., 9th Floor Hippodrome Bldg.
The Cuyahoga Builders' Supply Co., 6th Floor Schofield Bldg.
The Hydraulic Pressed Brick Co., 9th Floor Schofield Bldg.
R. L. Beck, 231 The Arcade
The Queisser-Bliss Co., 12th Floor Schofield Building.
The Stowe-Fuller Co., 12th Floor Rockefeller Building.

GINGER FACE BRICKS

BEAUTIFUL
ECONOMICAL
ENDURING

RESIDENCE UNDER CONSTRUCTION IN HIGHLAND PARK, DALLAS, FOR MR. CLARENCE LINZ.

We are furnishing White Porcelain Face Brick for this residence, to carry out its very distinctive and artistic color scheme

Our display of more than 100 shades and characters of Face Brick, at all prices, affords the widest possible choice for the selection of appropriate color and texture. We supply brick for every purpose, from small cottages and homes to large office buildings, court houses, etc.

Write or call for samples, quotations and other information

FRASER-MYERS BRICK CO.

Sole Manufacturers GINGER BRICK

Office and Display Rooms, 715-716-717 Wilson Building. Dallas, Texas.

BUY YOUR BRICK IN MACON

Why He Built His Home of Brick

BECAUSE: Buildings constructed of brick are most durable.
BECAUSE: They have a charm and style of their own.
BECAUSE: They are almost, if. not, as cheap as frame for the first cost.
BECAUSE: They are considerably cheaper than frame if you keep the building for ten years.
BECAUSE: Of the solidity and permanency of color.
BECAUSE: There is no expense for maintenance and repairs.
BECAUSE: Of their fireproof qualities.
BECAUSE: They. sell better than frame houses.
BECAUSE: The very old buildings in good condition today are of brick construction.

WHEN YOU BUILD USE MACON MADE BRICK

Standard Brick Co.

Macon, Ga. W. E. DUNWODY, President.

STANDARD BRICK

The Highest Grade Fire, Ornamental, Paving and Building Brick

Made by the most skilled labor in the South's largest kilns, with an annual output of one hundred million brick.

Schools, churches, factories and public buildings throughout five Southeastern states are being constructed today of Standard Brick. Our central location means low freight rates and therefore a saving. Lowest prices on large or small orders—shipments made promptly. Write for free sample of kind and color wanted.

STANDARD BRICK COMPANY

W. E. DUNWOODY, President. MACON, GEORGIA

Why He Built His Home of Brick

BECAUSE: Buildings constructed of brick are most durable.
BECAUSE: They have a charm and style of their own.
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BECAUSE: They sell better than frame houses.
BECAUSE: The very old buildings in good condition today are of brick construction.

When You Build Use Brick

Standard Brick Co.

Macon, Ga. W. E. Dunwody, President.

There are a few exceptions to this, and the clay product manufacturer is one of them. He has fooled himself into the belief that he could conduct his business without publicity. He knows he has something that everyone should want and he can't see why they don't buy it.

It is pleasing to note, however, a growing tendency among the manufacturers to take up the publicity end and while the cases are few and far between he is making himself heard.

"Brick and Clay Record" reproduces some of the more recent advertising just to show what is being done and who is doing it.

The Georgia-Carolina Brick Co., of Augusta, Ga., is one of the most persistent advertisers that has come to our attention. This concern doesn't believe in doing things half way, either. Augusta is a fair-sized city with most excellent newspapers. One of these papers—the "Augusta Chronicle"—runs a special page twice a week devoted to the building industry. Thursday and Sunday are the days set apart for this department and the section is edited in such a manner that it proves interesting to the prospective home builder.

It is significant that the Georgia-Carolina Brick Co. is the largest user of space on the page. It carries nearly a half page in every issue and the ads are not only well-written but well-displayed typographically. The ad reproduced in these columns is headed "Brick Talks." It might be said that the Georgia-Carolina concern makes "brick talk," for the argument is convincing and the home builder who sees it and reads it must be a hard-headed fellow who won't make up his mind that brick is the material he is going to buy.

We Are Not The
Only Clay Products
People on Earth, but-

these are facts—indisputable—irrefutable. They prove the size of this company —the magnitude of our business—and the quality of our products. We have

- **3 plants—**
- **66 buildings**
- **1000 employees —**
- **490 acres of land right in the city of St. Louis—**
- **240 acres of clay mines—**
- **9½ acres of dryers with 1½ miles of railroad tracks in the dryers—**
- **8 miles of private railroad tracks—**
- **56 kilns with a capacity of 10,000 tons per burn—**
- **58 years' experience in clay products and—**
- **$4,000,000 capital invested in the business.**

There is only one reason on earth why we have grown and waxed strong when others failed or quit. Laclede-Christy Products are honest in quality—construction—and price. They are the best clay products on earth for the money—bar none.

If they did not sell and satisfy how could we survive 58 years and do a bigger business today than ever before in our history? Think it over.

And doesn't that prove that this must be a pretty good company for you to do business with? Let us at least figure right now on your requirements—present or future.

LACLEDE-CHRISTY CLAY PRODUCTS CO.
Manchester and Sulphur Aves., St. Louis, Missouri

CHAPPELOW ADV CO. ST LOUIS No. [illegible]

H. H. Stafford, president of the concern, in writing to "Brick and Clay Record" about his advertising campaign, says:

"Of course the results from advertising of this character are not immediate, but we have heard the advertisements very favorably spoken of, and they seem to have set some people thinking for themselves, and making some estimates of their own as to the saving and advantage of a brick house. This is just the end we wish to reach.

"The demand has been excellent this season in our territory and popular opinion seems to be swinging toward brick as it has not done in a great many years If the brickmakers of the country will just push the publicity work we believe it will accomplish good that they never have dreamed of."

The Laclede-Christy Clay Products Co., Manchester and Sulphur avenues, St. Louis, Mo., is another progressive clay products company that uses printers' ink to good advantage. This concern not only uses newspaper space but also sends out a lot of attractive circulars, folders and booklets and treats the matter in such a serious way it employs an advertising agency to prepare its ads.

One of the latest folders sent out by the Laclede-Christy Clay Products Co., is reproduced in the same cut with the Georgia-Carolina ads. While this shows the strong argument presented to the prospective buyer, the illustration does not show the pretty and pleasing effect secured by the use of colored ink and paper.

The Fraser-Myers Brick Co., of Dallas, Texas, uses liberal space in the local papers to advertise a special product—its "Ginger Face Brick." These ads usually have an illustration of some recently constructed local residence in which "Ginger Face Brick" have been used, and no opportunity is lost to bring out the strong points of the product.

The Standard Brick Co., of Macon, Ga., is one of the most liberal users of space in the country. It does not confine itself to any one paper, but carries its ads in whatever publication it feels would prove profitable. The larger ad shown herewith occupied half a page in one of the daily papers. This same space is carried regularly with the paper which also conducts a building page similar to the Augusta, Ga., "Chronicle." W. E. Dunwody, president of the company, writes that his campaign has been a most profitable one and, judging from his experience, it does seem that the exception should be in the case with the fellow who does not do likewise.

In Cleveland, face brick people, as is well known, have formed a local association and the five manufacturers who compose this organization carry a half page advertisement regularly on the builders' page of the "Cleveland Leader." The ads are excellent and contain convincing arguments. The Cleveland Face Brick Association is one of the most active organizations in the clay industry, and the members see the importance of creating a local demand for their products.

BRICK TALKS!

Good Brickwork needs no repairs.
It never has to be painted.
It does not rust.
It does not twist, shrink or crack.
It does not rot.
It does not disintegrate or crumble away
Brick withstands all climates.
It has stood the "test of time."
It is good for centuries.
The earliest records of man are found inscribed on tablets of brick, while everything around them, even the "rocks of the ever-lasting hills" have crumbled to dust.
The Brickwork of ancient Babylon, Egypt and Rome still challenge the admiration of the world!
There are no repair bills with brick.
WHEN YOU BUILD---USE BRICK.

GEORGIA-CAROLINA BRICK CO.
AUGUSTA, GA.
Face Brick, Dry Pressed Brick, and Fire Clay.
Annual Sales, $65,000,000.
Nature's own colors, burned to the hardness of iron.
No artificial coloring.
Works: Georgia and South Carolina.
General Offices: Irish American Bank Building,
Augusta, Ga

"Brick and Clay Record," from time to time, proposes to reproduce ads used by clay product manufacturers, believing that these reproductions will not only show our readers what is being done by others, but give them some helpful suggestions.

WONDERS PERFORMED BY STEAM SHOVEL

Shale and Clay Successfully Handled at Small Cost—Revolving Shovel Solves Many Problem

A VERY successful and economical method of handling solid shale rock is shown by the contract of G. W. Prutsman, who is operating a Vulcan Giant B in digging solid shale rock for the Danville Brick Co., Danville, Ill.

The rock is of a bluish color, as hard as limestone, and known as kidney rock. It is perhaps the hardest material that has ever been excavated by a steam shovel without being blasted. It can not be shaved off like the ordinary shale rock, but is broken off in small chunks by the dipper teeth.

The shovel loads the material into steel dump cars of one and one-half cubic yards' capacity each, which are hauled up an incline two hundred feet long, thirty-five to forty per cent grade, to their stock bin by means of a cable. The company has four of these cars, two coming and two going. The bin holds enough rock to supply the company half a day. The shovel has a much greater capacity, but when they have the amount of material required for their daily output and have the stock bin filled, the shovel is shut down.

A Difficult Proposition.

The pit is, at present, eighty feet in depth and the company expects to take out shale thirty feet deeper. In order to get the shovel down into the bottom of the pit it was necessary to take it down a twenty-five to thirty per cent grade. This was accomplished by means of two one and one-quarter inch cables, one of which was fastened to the body of the shovel and attached to a drag twenty feet long and eight feet wide, on which was loaded about fifteen tons of rock. The other cable was fastened to the forward bolster of the shovel, and to a "dead man" placed ahead of the shovel and leading back to the hoisting drum. In addition to this a chain was fastened to the dipper, which was lowered to the ground, and to the forward bolster of the shovel, this forced the dipper into the ground. The shovel was then let down the grade by means of the hoisting engine; the dipper plowing through the ground, thus aiding the drag in resisting the weight of the shovel.

This shovel weighs about one hundred and twenty tons and is equipped with a one and one-half cubic-yard dipper. The car body is forty-two feet long by ten feet wide, and is mounted on standard gage railroad trucks. The boom is thirty feet long. The dipper will dump sixteen feet six inches above rail and thirty-one feet out either way. It will make a cut sixty feet wide in a ten foot bank and will clear a floor thirty-six feet wide.

It requires three men to operate the shovel, engineer, cranesman and fireman, and four men in the pit. The coal consumption is about two tons per day and about two thousand gallons of water, which is piped to the shovel.

This method of handling the rock eliminates the expense of blasting and also the use of a crusher, as the material is excavated fine enough to permit its being taken direct from the shovel to the grinders.

The Revolving Shovel.

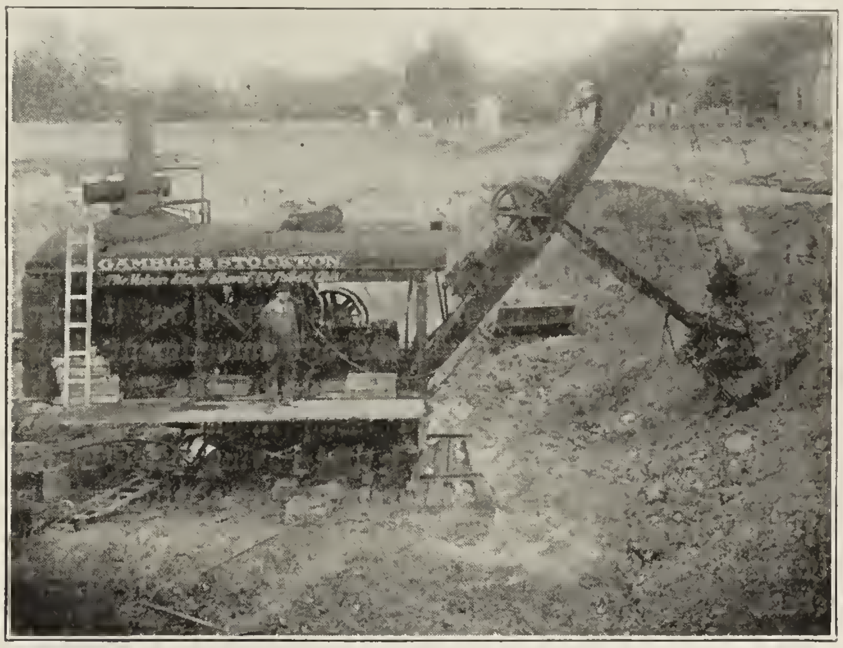
Another innovation in the brick industry is the development of the revolving shovel for excavating clay and soft shale. The low cost of operating this type of shovel has made it a popular machine for brick plants.

Gamble & Stockton, Jacksonville, Fla., are operating a 35-ton revolving shovel with good success in their clay pit at South Jacksonville. They have one of the most modern and best equipped brick plants in the south and are making on an average, about 200,000 brick per day. This output requires about 300 yards of clay per day.

The shovel weighs thirty-five tons and carries a ¾-cubic yard dipper. When operated to its maximum capacity it will dig about 500 yards. It revolves through a complete circle so that cars can be loaded at either side and at the rear. It clears a floor 36 feet wide and will dump 12 feet above the rail level. It is equipped with an adjustable boom attachment so that the boom can be raised or lowered when it is desired to cut through a high bank or clear a wide floor.

The cost of operating the shovel per day on this job is about as follows: One engineer, $5.00, one pitman, $2.00, ¾ ton of coal, $2.25, oil, waste and repairs, $1.00. Total, $10.25.

This estimate is only approximate and does not include interest on investment nor depreciation of shovel, but (outside of these two items) it is a fair average of the cost of operating this type of shovel in brick yards of the above named capacity.



Vulcan Giant Steam Shovel Excavating Shale Rock for the Danville Brick Co., Danville, Ill.

For plants of smaller capacity, smaller shovels are advisable, as the first cost is less, and well within the reach of plants making as low as 30,000 brick per day. Besides reducing the cost of excavating the clay these shovels cut through the entire bank and thoroughly mix the clay so that a better grade of brick is the result.

For brick plants of larger capacities than mentioned above the larger and heavier type of shovel has the call. These vary in size from forty-five to seventy tons in weight and capacities for handling from 500 to 2,000 cubic yards of clay or shale in bank or perhaps blasted rock per day of 10 hours, at an average cost of from two to three cents per cubic yard. Here, a great saving over hand labor is effected. The average man will not dig or handle over 25 cubic yards of clay or loose material per day of 10 hours. It would therefore require a gang of forty men to dig and load 1,000 cubic yards per day at a cost of from $60,000 to $70,000 per day. The steam shovel will do this work for less than one-half this amount.

OHIO GOOD ROADS AMENDMENT BEATEN.

The $50,000,000 Good Roads Bond Issue with Eight Other Amendments Defeated at Special Election.

Final figures from 87 of 88 counties in the state of Ohio show that eight of the forty-two amendments voted on at a special election held Sept. 3rd, were defeated and it is much to be regretted that the fifty million dollar good roads bond issue was among the defeated measures.

This amendment calling for the expenditure of such a large sum of money, naturally met with vigorous opposition throughout the state and while the friends of the movement labored long and hard, they were unable to secure sufficient votes to carry the issue.

The National Good Roads Association, of which Alfred C. Jackson is president, placed a number of workers in the field, and meeting after meeting was held in prominent cities and towns and a million pieces of literature were distributed besides large numbers of good roads buttons, furnished by R. C. Penfield.

The ladies of the state were enlisted in the cause and did much to influence voters to support the movement. Mrs. Murfey and Miss Maude E. Jones, representing the National Good Roads Association, did valiant work in this connection, working day and night for several weeks prior to Sept. 3rd.

The press and the clergy throughout the state were also of the greatest assistance in educating the people as to the influence of good roads in the religious and social life of the community.

The fact that the total vote was less than 550,000, 50 per cent less than the normal, may explain in part the defeat, but the fact that the liquor interests turned out in force and defeated the popular equal suffrage amendment shows that if a similar effort had been made by the paving interests the good roads bond issue might have gone through. It is to be regretted that paving brick manufacturers did not go into the movement with greater zeal and energy and support this measure, which undoubtedly would have resulted in putting many dollars into their pockets.

Only when the clay industry wakes up and takes hold of these progressive movements will prosperity walk hand in hand with clay products.

Bucyrus Shovel Breaks Record.

In the excavating work for the Isthmus of Panama, the record for July was broken by a Bucyrus shovel which loaded 202 cars, containing 3,434 cu. yds., in eight hours. This is 119 cu. yds. more than the previous daily Isthmian record for a 70-ton shovel, made by the same shovel and crew on April 2, 1912.

The high record for the entire month, in the Culebra district, was made by a Bucyrus 95-ton shovel, which excavated 58,412 cu. yds. of earth in 26 days.

Reports Fine Trade Conditions.

Mr. C. W. Emery, manager of the Des Moines (Ia.) Clay Mfg. Co., recently made a business trip to Missouri and reports that building prospects throughout Missouri are exceptionally good. Mr. Emery sold 150,000 of the Des Moines Clay Mfg. Co.'s impervious facing brick for the new Catholic school to be erected at Clyde, Mo.

TEACH USES OF BRICK.

Cleveland Association Waging Campaign to Educate Builders as to Its Advantages.

The Cleveland Face Brick Association, organized to promote the use of brick, is conducting a business-like campaign to educate the people as to its advantages and economy. With a great many people, even those who have built or intend to build, a brick is a brick. They have seen thousands in the walls of big buildings and occasionally in a residence. In some cities they found them used for sidewalks and in many cities for paving.

"Sure, they know all about brick—or think they do," said a brick man. "Yet it is surprising how few really do know anything about brick as it applies to the modern material in baked clay. People look at our samples and the usual expression is: 'My, I didn't know there were so many different kinds of brick.' They are surprised to see hundreds of different shades and colors and finishes when they supposed all brick were red.

"We want all to know that they may have as great a variety of colors and shades to select from in deciding upon a brick house as they would if they were selecting paint to cover their wooden house; that the brick never changes and never has to be painted or repaired. We want a chance to show them something of the character that can be attained in the brick house and the distinctiveness that makes one proud of his home every time he approaches it.

"Most of all we want everybody to know that the house of brick costs no more than the wooden house. The small difference of perhaps 10 per cent, at the time of building, is quickly wiped out by repainting and repairing the wooden house, to say nothing of the difference in fire insurance and the fuel used in winter. We make a point of the fact that it costs thirty-six times as much to maintain a wooden house as to keep up a brick house."

Brick Memorial to Titanic Victims.

On the site of Gore Hall in the Harvard yard, Boston, Mass., will be erected, within a short time, a fireproof structure of brick and limestone to be known as the Harry Elkins Widener Memorial Library. The cost of the building, it is said, will exceed $1,000,000.

This memorial to Harry Elkins Widener, who, with his father, George D. Widener, was lost at sea in the Titanic disaster last April, is entirely the gift of the mother, Mrs. George D. Widener.

SONG OF THE STEAM SHOVEL.

"Chuff! Chuff! Chuff!" Oh, the grade is rough,
An' the way to the sea is long;
"Chuff! Chuff! Chuff." An' the engines puff
In tune to the shovel's song.
We're a-shiftin' miles like inches, an' we grab a forest here,
Just to switch it over yonder so's to leave an angle clear;
We're a-pushin' leagues o' swamps aside so's we can hurry by—
An' if we had to do it we would probably switch the sky!

"Chuff! Chuff! Chuff!" An' it grabs the scruff
O' a hill an' boosts it along;
"Chuff! Chuff! Chuff!" Oh, the grade is rough,
But it gives to the shovel's song.
You hears it in the mornin' an' you hears it late at night—
It's our battery keepin' action with support o' dynamite;
Oh, you gets it for your dinner, an' the scenery skips along—
In a movin' panorama to the chargin' shovel's song!

—From "Rhymes of the Firing Line," by Damon Runyon.
(Desmond FitzGerald, Inc., Publishers, New York.)

How are you mining your clay? Perhaps you could find a better and more economical method of mining. Read Ellis Lovejoy's practical article on the subject. It is full of helpful suggestions.

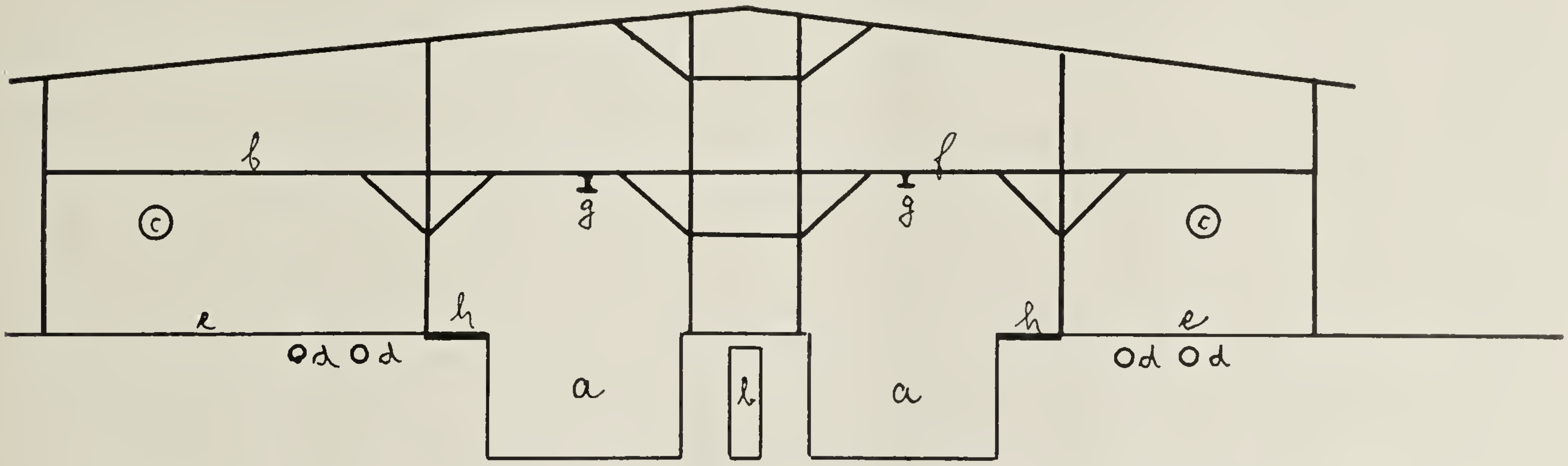
CONTINUOUS KILN INVENTED BY KANSAS MAN.

Low Cost of Construction and Operation Claimed by Inventor—Other Time and Labor-Saving Devices.

As we have recently been discussing the kiln problem, at some length, in our journal, a description of the drying and burning system in use at the plant of the Seneca Shale Brick Co., at Seneca, Kansas, will, we believe, be of special interest at this time. A large variety of wares are made at this plant, including building brick, hollow building tile, floor tile, drain tile and partition tile, but it is the general arrangement of the yard that is novel and will be of interest to the practical clay manufacturer, who is looking for "short cut" methods which accomplish results.

The entire plant, which turns out about 600,000 brick per month, is sheltered under one roof in a building 80 x 160 feet, where all the goods are molded, dried and burned.

The most striking feature of the plant is a continuous kiln which it is said, (though hard to believe), can be built for less than $500 in labor. The kiln seems to have all the improvements of the most expensive kilns. The Seneca company claims it can scarcely be beaten by any of them in fuel economy and quality of output. Large flow-tiles 12 in. x 12 in. x 12 in. are even burned in it very successfully.



Showing Arrangement of Plant of the Seneca (Kan.) Shale Brick Co. a, Burning Channels; b, Main Smoke Flue; c, Main Smoke Flue as Radiator; d, Hot Air Flues; e, Lower Floor Dryer; f, Upper Floor Dryer; g, I-Beam Line; h, Paved Floor.

The kiln is simple and consists of two parallel underground burning channels, which when filled are level with the yard flow, which is 5 feet above the side-track. The hot air flues drawing the heat from the burned brick are so arranged that they not only watersmoke and warm up the freshly set goods independently of the fuel gases, but at the same time serve as hot floor dryers.

The main dryer consists of a slotted floor, 10 feet above the kiln. All radiating heat from the kiln is therefore used for drying. Besides the upper floor dryer, both sides of the kiln are used for drying purposes.

The manner in which the brick and tile are conveyed into and out of the kiln is interesting also. A small ½-H.P. electric hoist, hooked to a trolley which is traveling in an I-beam line lowers and lifts the pallets of green and burned brick into and out of the kiln. This arrangement, it is claimed, beats by far, in speed and efficiency, the track and car system which is in general use with the arched over kilns.

In cold and wet weather the heat radiating from the kiln does not dry enough brick, and to overcome this it is planned to use the heat of the fuel gases for drying. These gases leave the kiln at about 240 deg. F. and contain much steam coming from the hygroscopic and chemical water of the clay. By cooling them off in radiators the steam is condensed, the latent heat regained and the volume of the gases reduced, thus increasing very materially the efficiency of the fan. A small fan, run with less than 3-H.P., creates all the draft needed for the kiln.

The machinery equipment of the plant consists of an 85-H.P. electric motor, a 9-ft. dry pan and low frame combined brick machine, both made by the American Clay Machinery Co. The auto-cutters and elevators were made by the J. D. Fate Co.

A double platform elevator takes the freshly molded brick and tile to the upper floor. The pallets are loaded directly onto the elevator platforms and no trucking whatever is required on the lower floor. When the goods are dry the pallets are trucked upon an inclined gravity elevator which lowers them down under the I-beam line where the electric hoist takes them from the elevator platform and transfers them into the kiln. Drymore trucks and pallets are used.

The raw material is a fat loam shale. It has a very short burning range and is extremely sensitive to quick heating, and therefore requires more than usual care in burning. The yard was in operation all last winter, although the temperature was, at times, 15 deg. below zero. The quality of the product of the Seneca company is considered the equal of any of the gas-belt products.

Mr. K. W. Klose, the general manager, is the originator of the drying system in use at the plant and he has applied for patents for each novel feature and for the system in its entirety. He claims that there does not exist another general arrangement by means of which an equal output could be handled with as few men and as little fuel. The total fuel consumption for drying and burning is, he claims, about 300 lbs. to 1,000 common brick. He further states that it is the cheapest arrangement possible to be constructed for any yard.

SALTY DEPOSITS ON BRICK WORK.

French Writer Discusses World-old Problem of Efflorescence, Lays the Blame to Salt—Suggests Remedy.

The causes of irregular whitish spots which frequently appear on brick, after exposure to the weather, have been discussed in these columns many times, with apparently no definite conclusion as to the cause or cure of them. The following, translated from the "Revue Scientifique" may shed some light on the matter, at any rate, it will give you another man's view of the matter.

"Owing to their lightness, convenience, and ease of handling and to the extreme variety of the decorative effects that their use makes possible, brick have assumed considerable importance in modern construction. Unfortunately, the appearance of the façades in which they constitute the principal material is often injured by saline efflorescences forming brownish or yellowish patches: the solidity of the walls is at the same time affected because the crystallization of the efflorescent salts not only favors the disintegration of the brick, whose pores they enter, but also determines moist areas that soften the mortar of the joints and facilitate the scaling of the paint.

"Similar efflorescence also appears on brick before using, notably while drying, and this is sometimes the cause of loss to the manufacturers, who are obliged to abandon the clay deposits on which they are at work, or sell their brick at less than cost.

Caused by Soluble Salts.

"These annoying deposits have been studied for a long time. It is known that they are formed by a layer of soluble salts that the water has brought from within to the outside of the brick, and which have crystallized, on contact with the air, by simple evaporation of the liquid that has held them in solution. For the most part, these salts are sulphates of potassium, sodium, aluminum, magnesium, and particularly of lime; the latter, though not very soluble, makes the most abundant efflorescences and the least easily washed away by rain. But we find also constantly chlorides and carbonates, chiefly of potassium and sodium. It would seem then that the presence of soluble salts in the substances used must be the indispensable condition to the appearance of the phenomenon. Nevertheless, it has been shown that certain efflorescences are made up of pure sodium carbonate, though neither the brick nor the water, nor the mortar used, contained the slightest trace of this salt. It is supposed that in this case . . . there is a chemical reaction between common salt in the water used and the lime of the mortar. But in most cases these salts pre-exist, fully formed, either in the clay used in brick-making, or in the water, or in the mortar; sometimes, also, they may result from oxidation in the burning or from the action of sulphurous gases in the furnace.

"It has been hoped to eliminate these salts by simply washing the clay, but this is always expensive and sometimes spoils the material, the usual practice being to expose it to the rain, which contains acids that render soluble the insoluble salts in the clay, thus making matters worse. A better plan is to use none but the best quality of clay in brick-making, and the finest mortar in putting the bricks together. Water containing dissolved mineral substances should never be used for either purpose. If such substances are present in the clay, they may be rendered insoluble by chemical means, such as treatment with a solution of a salt of barium.

"As for existing deposits, they can easily be caused to disappear by washing, either with pure water, or, if this fails, with slightly acidulated water. The information given above should be in the possession of all persons in the building-trades, who will find frequent occasion to make use of it."

HOW THE SCHOFER CHIMNEY IS MADE.

Numerous Inquiries Find Answer in Description for Schofer's Patent Process Blocks.

Since the publication in the Sept. 1st issue of "Brick and Clay Record" of the description of the new Schofer patent chimney block and the suggestion that its manufacture by brick yards would prove a profitable side line during the dull seasons, numerous inquiries have been received for further details, particularly the process of manufacture.

The use of waste brick from the brick yard in making the chimney has appealed to many who have found no market for this material in the past. Von Schofer, the German who patented the process, declares that burned clay offers the best material. This material which already has sustained a heat of about 1,000 degrees centigrade in the fire, is proof against any heating, which, when mingled with cement, assimilates the same by suction and becomes thereby extremely dense. This mixture has been termed "Brandstein," meaning firestone. The production or manufacture of the Schofer chimney is very simple:

Cement is mingled in a mixer with the waste brick crushed to pieces averaging one-half cubic inch, in the proportion of 1:7 with the addition of a good quantity of water. The liquid concrete is then filled into the molds by means of compressed air, the molds standing on a locomobile or portable shaking table. After the concrete has become dense through the shaking movement and has settled in the molds, the latter are shoved into a drying chamber which is heated by means of the waste vapors from the boilers and ovens or kilns. Thereby the hardening of the concrete is accelerated, so that the stones or blocks can be taken out of the molds all ready after the lapse of eight hours. Thus the manufacture is effected almost entirely automatically and by means of machines. The material being exclusively yielded out of the offal in brick manufacture, it is evident that the chimney blocks can be produced very cheaply.

In most of the European states the patents for the Schofer invention were sold in the past year and large factories have sprung up for manufacturing the new brick chimney block. There are in Germany about half a dozen factories that have acquired licenses and utilize the offal from brick and tile for the manufacture of chimneys. These factories are all working at their full capacity.

Dr. Otto Schott, Fifth avenue building, New York City, represents the owners of the patent in the United States and writes that the idea of utilizing the brick yard waste in a profitable manner during the winter or dull season is appealing to many progressive clay product manufacturers.

Brick manufacturers at Berlin, Conn., have sold nearly all the swelled-brick they had on hand to the state highway department. The brick are to be used on an experimental section of road being built near Wallingford under the direction of James H. MacDonald, the highway commissioner.

Swelled-brick might be considered a waste product, of no use in the building business. The highway commissioner is trying the experiment of using this kind of brick on this road, and men familiar with the road building business believe that it will be a success.

STREETS THAT MAKE CLEVELAND FAMOUS.

Novel Float Draws Attention to Brick Paved Streets. Cleveland, the Mecca of Paving Construction.

That "Cleveland's brick paved streets have made the city famous" was strikingly brought to the attention of thousands of visitors and residents of the sixth city, on Cleveland Day, celebrated recently. The city never forgets its natal day, and the big parade which is held every year is typical of its civic progress.

Mounted on either side of a pretty gray automobile, which formed the float of the National Paving Brick Manufacturers' Association, were two enlarged photographs, 4x5 ft. in dimensions, draped with the national colors. One of these pictures showed a brick paved city street, the other a country highway paved with vitrified brick.

Cleveland is certainly "on the map," when it comes to brick pavements. This year it improved, with brick, 118 streets aggregating 35 miles, while Cuyahoga County, of which Cleveland is the county seat, is laying 75 miles of brick paved country highways. This will bring the mileage of city streets and country roads in the Cleveland district, improved with brick, to the magnificent total of 1,100 miles.

Cleveland lays its streets practically in accordance with the No. 1 Specifications of the National Paving Brick Manufacturers' Association. As a result, some of the streets laid 16 years ago have not required the expenditure of a single cent for maintenance.

Cleveland is the Mecca of students of paving construction, and is pointed to with pride by the entire clay industry, as the city of model brick paving.

Float of the N. P. B. M. A. Which Attracted Much Favorable Attention on the Streets of Cleveland on Cleveland Day.

BRICK ROAD BEST ON EARTH.

Government Expert Declares Brick Cheapest and Most Lasting Road Surfacing—Up-Keep Practically Nil.

"Clay County should take advantage of the cheap brick produced here to make a sample road. They are the best and cheapest in the long run and the up-keep after they are built is practically nothing," said L. E. Boykin, United States Government good roads expert, representative of the Good Roads Special Train on the Frisco lines while at Brazil, Ind. The Good Roads special was visited by several hundred Brazil citizens interested in better roads and the lecture was heard by an immense crowd.

The following account of the exhibit appeared in a recent issue of the "Brazil Times":

"The Good Roads special consisted of four cars, equipped with an electric lighting system. One of the cars contained large exhibits of model roads which were very interesting. The roads were not constructed of any special material, but the exhibit showed how the best roads could be made with the material available. There were borders of large pictures showing examples of bad and good roads, the brick road at Newman, Ill., which has caused so much comment, being shown. There were well constructed models showing the proper construction of concrete bridges, culverts and road sewers, grades, dirt, clay, macadam, macadam with asphalt and tar fillers, brick roads, sand roads and, in fact, every known road. A model road scraper and draw was shown and a tiny steam roller was in operation.

"The train has been on the road since March and closes the season at Morocco, Ind., this week. The expense of the train is borne by the Frisco system and the government in the hope that the country can be awakened to the advantages of better roads.

"One of the interesting phases of the pictures of good roads was that wherever there were very bad roads the schools compared and where the roads were fine the school houses and school children looked brighter and better.

"The model of the brick road showed the pavement 14 feet wide, inclosed by a concrete curbing, the brick being laid on sand over a concrete base. Local engineers have shown that the concrete base is hardly necessary, as the gravel base will hold heavy loads."

PLAN 3,340 MILE NATIONAL ROAD.

Indiana Automobilists at Banquet Start Campaign with Appropriation of $300,000.

A roadway to extend from New York City to San Francisco, a distance of 3,340 miles, and to cost $25,000,000, was proposed in Indianapolis Tuesday night, Sept. 10th, at a banquet of 300 Indiana automobile manufacturers and dealers, who subscribed $300,000 to start the campaign in the "Hoosier" state.

The plan is to furnish material, at a cost of about $12,000,000, free to the counties through which the road will pass, the counties to pay only for the cost of construction. The route is to be selected by a commission to be chosen by an organization of automobile manufacturers and the road will be constructed under the supervision of government engineers, according to the promoters.

Charles E. Gregory, president of the Chicago Motor Club, was enthusiastic over the proposition when shown the dispatch telling of the plan. He asserted his conviction that such a project, if carried out earnestly and honestly, would have a far reaching good effect upon the country as a whole.

"It is a magnificent idea," he exclaimed warmly. "The benefits accruing from such a highway to farmers living within its sphere of influence would be incalculable. Besides, if this national road is built it will furnish the impetus needed to establish a chain of highways extending in every direction all over the country. These roads would intersect the main highway and thereby facilitate motor travel to all parts of the country. It would be a great stimulus to the automobile and wagon business, not to mention the railroads. I am certain the idea will meet the approval of Ira M. Cobe, president of the Chicago Automobile Club, who is out of the city at present. He is a firm believer in good roads and such a proposition as the Indiana auto dealers have originated would meet with his instant approbation."

Hubert E. Miller, business manager of the Chicago Association of Commerce, did not take such a rosy view of the situation.

"So many schemers have worked the good roads plan in this country in the last few years that we have learned to take nothing at its advertised value until we have investigated it," he declared.

"The Indiana idea sounds all right, and, of course, everybody who realizes the need we have of good roads here must approve anything tending in that direction. But the Association of Commerce cannot indorse it unless it is right, and this is something we have had no opportunity to determine as yet.

"Indiana is a mighty good place to start a good roads movement, however. It is far ahead of Illinois in that respect now and is spending money all the time. It is not surprising to hear that such an impetus has come out of the Hoosier state, and I sincerely hope it will be carried through to a conclusion."

ECONOMY OF GOOD ROADS.

American Road Congress to Discuss Ways and Means of Improving Roads—Consumer to Benefit.

That not less than $250,000,000 would be saved to the country, in the cost of hauling the present record breaking crop, if 20 per cent of the public highways of the country were improved, is the assertion of J. E. Pennybacker, Jr., executive secretary of the American Road Congress, which is to be held in Atlantic City September 30 to October 5. Mr. Pennybacker, before becoming the Secretary of the American Association for Highway Improvement, which, with the American Automobile Association and the National Association of Machinery and Material Manufacturers will hold a convention at Atlantic City, was the chief of the Road Management Department in the United States Office of Public Roads, has made a comparative study of the cost of hauling crops over good and bad roads.

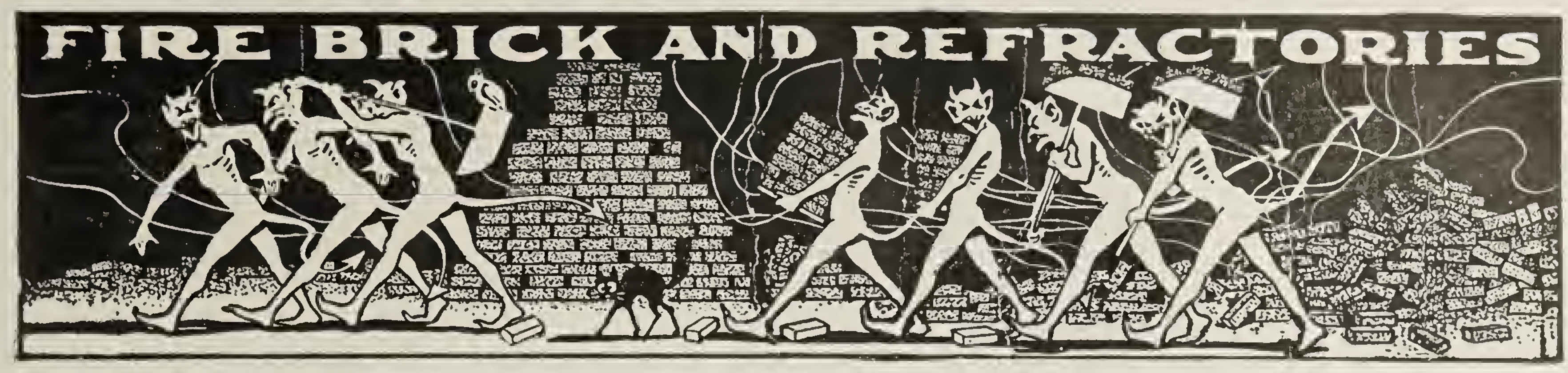
Because of his knowledge of the actual needs of the country, Mr. Pennybacker was selected as the executive secretary of the American Road Congress, which is to crystallize the road movement in America. In an interview, Mr. Pennybacker says that he believes that the American Road Congress will so influence public sentiment that it will be merely a matter of a few years before 20 per cent of the public highways of the United States will have been improved. At the present time little over 8 per cent of the public highways are of the improved type.

"The governments' prediction that the crop now being harvested will exceed any previous year's yield," said Mr. Pennybacker, "should serve to call attention to the great losses that are being sustained by farmers and consumers in the hauling of crops. It is estimated that the improvement of the main roads of this country, approximately 20 per cent, would result in an annual saving of at least $250,000,000 in the cost of hauling alone, which would be sufficient to improve 50,000 miles of road at a further cost of $5,000 per mile. In five years this would improve 250,000 miles, which would be sufficient to bring the total mileage of improved roads up to 20 per cent.

"There are more than 25,000,000 farm horses and mules in the United States, valued at $2,700,000,000; about 1,500,000 horse-drawn vehicles valued at $83,000,000, and more than 450,000 automobiles valued at about $500,000,000. A depreciation of 5 per cent, caused by the wear and tear of bad roads, would amount to $164,000,000 annually, which at $5,000 per mile, would be sufficient to build 32,800 miles of improved roads.

"These are but a few great economic facts which will be brought to the attention of the American people at the American Road Congress to be held in Atlantic City September 30 to October 5. Once the people realize the great waste involved in bad roads, there will be little delay in the improvement of the main arteries of commerce throughout the country. The whole subject is so big that arrangements have been made to treat it in sections at the Congress.

Brick failed to get its share of the fat contracts let in Philadelphia during the past year. Of the $2,440,328 spent for paving, only $90,199 was for brick paving; asphalt, $1,208,368; wood block, $275,522, the remainder going for bituminous, stone and granite.



FIRE BRICK FOR USE IN LIME KILNS.

Fire Brick for Use in Arches and Linings Must Be Made with Extra Care.

W. L. Hamilton, superintendent of the Union Mining Co.'s plant at Mt. Savage, Md., in an address before the annual convention of the National Lime Manufacturers' Association, recently held, in New York, tells interestingly of the preparation of fire brick for use in lime kilns. His remarks were as follows:

Our investigations in regard to making fire brick which would successfully withstand the action in lime furnaces began three years ago, and our Technical Department has been working ever since to determine what sort of fire brick would answer the requirements. The work has been interesting, and we feel that we have made a vast improvement upon the brick which were formerly offered for this class of work.

To make further improvements so as to give maximum results from your kiln lining is our sincere intention, and your co-operation is earnestly requested as a means to the end of giving you entirely satisfactory fire brick linings and arches. When I speak of co-operation, I do so advisedly, for I have known in my experience where we have furnished to one of the largest brick using concerns in the East entirely satisfactory fire brick, but we did not do so until their engineers had conferred with us, and we thoroughly understood the plan and action of their furnaces. They also explained to us what kind of fuel was used, and how it was fired, and their stock analyses. With this data in hand, we made brick, which they tell us have been very satisfactory to them.

Methods of Burning Differ.

While the principle of the lime burning kiln is about the same in all cases, the methods of burning are different on nearly every plant, and as the methods of firing vary, so will the results from the fire brick linings and arches vary. To develop brick which will hold up universally in all of these conditions has been our endeavor since we began the work on this subject.

As you already know, other materials have been used for lime kiln linings with more or less success. Sandstone, gannister rock, chrome and magnesite have been experimented with, with various results. Brick of chrome and magnesite would theoretically be the ideal lime kiln lining, but practically they do not answer, for they will not respond to the continual changes of temperature which you have in your practice. They are also very expensive, and the most satisfactory material is found to be refractory fire clay. This material has been used most extensively in lime kilns, and is beginning to be regarded as the most practical material for that use. The properties and geological feature of fire clay have been thoroughly explained to you, and it remained for us to take these flint and plastic clays and compound them so that they would be better able to take care of your work.

Many trials were made, using different percentages of the flint, plastic and the calcined material. The texture or size of the grains was also figured upon, and all of these trials were subjected to your practice as near as it is possible for us to do in our laboratory, and a mix and grind was determined upon which seems to be giving very good satisfaction to the lime makers who are using the goods. After these mixes and grinds had been determined upon, it was necessary for us to devise apparatus to correctly measure the clay in the proportions we had determined were the best.

Human Equation Eliminated.

Understanding fully that the men at the pans could not be entirely depended upon to get the mixes properly regulated, we devised a unique arrangement which accurately measures the clay, and at the same time deposits it in the mixing pans in a thoroughly uniform manner, so that we know absolutely that we do not get varying quantities of the flint, plastic and calcine material in any of the brick. This is an important feature. All of the mixing apparatuses which we had used heretofore, and which are used generally in the brick industry, tend to deposit the different constituents in bungs or gobs throughout the clay batch.

We eliminated the human equation, and as a result our brick are uniform to as great an extent as is possible in hand-made brick. This feature permits us to deliver our brick to you, truer to size than has been the custom heretofore, and the fact that they are true to size permits you to use a minimum of joint clay which you well know is a valuable feature. We have striven to get you brick that would give to you the desideratum of the furnace and kiln men, "brick to brick joints." We have seen our material put in furnaces, where not a bit of joint material was used.

Other installations we have noted where the joint material was extremely thin, about the consistency of soup, and the brick were simply dipped in this mixture and put into place, no tools of any kind being used by the masons. We use this latter plan in construction work at our plant, with highly satisfactory results. It goes without saying that uneven joints will give you more or less trouble, and we are striving hard to get material that you can use with a minimum of clay joints.

Sizes of Brick.

It would be commercially impossible for us to guarantee to you that every brick furnished would be absolutely true to size, but we do get them as true to size as it is possible to make material from fire clay. In some of the foreign countries I believe they do get their materials actually to size, but you will have to take into consideration that they take a great deal more time than we are allotted in this country to fill an order, and they also get better prices for their goods. You can co-operate with us, on this point, by anticipating your requirements as much as possible, allowing us ample time to make up the material, thoroughly dry it, burn it and load it into the cars.

Co-operation of Consumer.

You can co-operate with us, in another way, by submitting to us plans of your furnaces when you are ordering a lining or arches, so that we can study the design, and make our material answer the requirements to which they will be subjected in your design. It may be possible when we have looked over the plans, that we could offer suggestions which would considerably prolong the life of your refractories.

It may be that your fire boxes are so arranged that you do not get sufficient draft over the top of your fires, and if this is the case, you will have reducing temperatures continually, and no refractory materials are able to stand this treatment for any great length of time. You must have opening enough, on top of the fire, to carry these hot reducing gases into your shaft, or your brick will immediately suffer, and these gases must also have free access through your stack, or deleterious results will be experienced on the lining of the shaft.

We employ shaft kilns of the same type and principle as your lime kilns, for calcining our clays, and we have noticed that if we carried our fires high so that there was not a free admission of air over the top of them, that the arch in the fire box would immediately begin to bag down. The arch would then be replaced, and the fires handled in such a way that there would always be a free admission of air, and the results would be most gratifying.

The same argument applies to the shaft linings. If the proper admixture of air is not permitted to flow through the stock, you immediately set up a re-action which will injure the lining. Our clays, in open temperature, will not fuse until the heat has risen far above that necessary to accomplish the work, and when you have trouble on account of the brick melting, you have a condition that should not exist, and co-operation between yourself and the brick-maker, I think will eliminate, to a great extent, this shortcoming.

Difficulties to Overcome.

Your kilns are much harder to provide satisfactory arches and linings for than blast furnaces, for the reason that the charge in a blast furnace begins to soften when it comes down into the heat zone, and does not have any abrasive effect upon the brick, and the brick in the hearth and bosh of a blast furnace are additionally protected by water cooled jackets.

In your case, nearly as much friction is encountered from your stock in the heat zone as you get in the top, and it has required a good bit of study on our part to devise ways and means to develop brick which would be highly refractory, and at the same time, hard enough to withstand the wear and tear which is bound to occur in your work.

We also had to reckon with the basic action of the lime when it was passing through the hot section of your shaft. Heretofore it has been the custom with brickmakers, when hard brick were necessary, to increase the percentage of plastic clay. This procedure would of course give you the desired hardness, but would at the same time reduce the refractoriness of the brick, which was not advisable. Nearly all plastic clays, as you know, have a lower ultimate melting point than flint clays, and as no brick is any stronger than its weakest constituent, it was necessary for us to work out a plan whereby we could make brick hard enough to stand your practice, and at the same time be entirely able to hold up in your severest temperatures. We think we have accomplished this purpose to a large extent, but we are still making improvements which will further increase the value of our materials in your work.

Sudden Temperatures Provided For.

Another feature with which you have to contend is sudden temperature changes, and in making up our special lime kiln brick, we kept this fact before us all the time, and tests at our plant upon the special lime kiln mixes have indicated that they will respond successfully to sudden temperature changes for a great length of time. For instance, we have taken these brick and heated them to 1,300 degrees Centigrade, took them from the furnaces and plunged them into a tub of cold water, and this action repeated for as many as eighty times, before the brick were finally destroyed. This we consider an extremely severe test, much more severe than they would be subjected to in your practice. The regulation of the texture is carefully watched so that this action will not have a deleterious effect upon the lining of arches.

Burning the product properly is the next feature that had to be carefully studied. In order to get hard, uniform burns, we rearranged our kilns, and in conjunction with pyrometric cones and recording pyrometers, we are able to keep the burning process well in hand, and advance the heat in a proper manner until the work has been finally accomplished, and the results are as nearly uniform as it is possible to get them.

Careful Loading Essential.

Finally, the brick have to be loaded into railroad cars, and special attention is given to this feature. They are carefully packed, and we aim to arrange them in the cars so that the customer will have no trouble in unloading them, and if the car contains mixed shapes, we always endeavor to place them so that it will be an easy matter for the customer to tally the different varieties and place them in his stock sheds to the best advantage. We realize that the carrying companies have no regard for the material in their cars, and that they are subjected to serious shaking around in transit, and in order that the material may get to you in the best possible condition, we make them absolutely tight so that nothing short of a head-on collision could move them.

BUILDS HOLLOW TILE HOUSE.

St. Louis Fire Brick Manufacturer Plans Fireproof Home with Many Novel Features.

The first hollow tile residence to be built in St. Louis, is being constructed at 12 Kinsbury Place for Jack L. Green, president of the Laclede-Christy Clay Products Co. Special permission for the unusual structure was obtained from the Building Commissioner. Hollow building tile is one of the many products of the Laclede-Christy Clay Products Co., and it is therefore fitting that the home of the president of the company should be built of that material. Drain pipe rings, also manufactured by the company will be used as an ornamental feature in the parapet at the front of the house. The surfacing will be of stucco, laid directly on the building tile. The entire structure will be fireproof, with the exception of the picture moldings and doors which will be of wood. The floors will be of paving tile, laid on floor tile.

The architect of the residence, has introduced several other attractive novelties. The structure is two stories high in front and four stories in the rear. One story in the rear is below the first floor level, where the garage is located. The fourth floor is fitted up as a sleeping porch, entirely open at the sides with a bathroom adjoining.

The servants quarters are all on the parlor floor and include two sleeping rooms with bath between, a servants' parlor and dining room. The other apartments on the first floor are living rooms, dining room, main hall, library and sunroom. On the second floor are five bedrooms and four bathrooms. The cost of this structure will be $35,000.

POTTERY NEWS

INDUSTRY SHOWS $1,000,000 GAIN.

Statistics Give Ohio First Rank Over All Other States, New Jersey Second, West Virginia Third.

In the last decade or more, it is claimed by those interested in the development of the domestic pottery industry that general ware and sanitary potteries have been established in 20 or more towns west of the Allegheny mountains, while only three firms have either built new plants or increased the capacity of old ones in the East Liverpool, O., district.

Potteries have been established in Crooksville, Carrollton, East Palestine, Salineville, Sebring, Minerva, and Salem, in Ohio; Ford City and Cannonsburg, Pa.; Cameron, Mannington, Clarksburg and Huntington, in West Virginia; Athens, Georgia; Roodhouse, Ill., and in California.

While these new plants have been established outside of the East Liverpool territory, the Eadin M. Knowles China Co.; Taylor Smith & Taylor Pottery Co., Homer Laughlin China Co., and the Knowles, Taylor & Knowles Co., have either built new plants or increased the capacity of old ones in the East Liverpool territory.

The kiln capacity of all the potteries built outside of the East Liverpool territory is greater than the additional kilns built in the East Liverpool district during the same length of time.

That Ohio and West Virginia have led in the construction of new potteries there can be no doubt. But the construction of new potteries is not at an end, and plans for new construction are progressing.

John Grafton, of East Liverpool, O., has taken up a proposition with business men and citizens at Washingtonville, (Columbiana County, O.), for the construction of a five-kiln pottery in that town. Details are progressing most favorably, it is said. Mr. Grafton and his associates plan to put $20,000 into the plant, providing the Washingtonville people raise a similar amount and donate a site. It is also proposed to employ 200 people in the new plant, plans for which are being drawn.

The Hardstone Pottery Co. is the name of a new company which is going into business at Cincinnati, O. The charter has just recently been obtained. The company has a capital stock of $25,000 and is headed by Robert Mitchell.

P. Neilson, a mold-maker of the A. E. Hull Pottery Co.'s plant at Crooksville, O., plans to build a new pottery there for the purpose of making Danish pottery—art ware in particular. Denmark capitalists are interested in the movement, and two of them have recently visited the Crooksville district with this end in view.

Indications are that the referedum vote of the members of the National Brotherhood of Operative Potters will be against the employment of a National organizer, who would receive an annual sum of $1,400 and expenses. This proposition was one that was acted upon at the last national convention.

No date has been set for the coming joint conference between committees representing the National Brotherhood of Operative Potters and the Sanitary Pottery Manufacturers' Association, which is to be held to adjust the new working agreements for the coming two years, effective November 1, next. While there is ample time for a conference, it is the general opinion among the manufacturers that a joint conference will be held sometime during September.

There will be no joint conference between the Brotherhood officials and the United States Potters' Association Labor Committee this year, for their agreements do not expire until October 31, 1913.

The Shenango China Co., of New Castle, Pa., which concern recently purchased the plant of the New Castle China Co., will not operate the additional property, according to report, until January, next. In the meantime, the property is being improved and repaired, and additional machinery is to be installed later. The operation of both plants will give the firm a producing capacity of about $400,000 annually.

The production of domestic pottery, sanitary pottery and art pottery for the fiscal year of 1911, which ended June 30, last, for the United States, totaled $34,518,560 as against $33,784,678 for the previous fiscal year, or a gain for 1911 over 1910 of $733,882.

1912 Shows $1,000,000 Gain.

With not as many domestic potteries in operation in 1911 as there were in 1910, the gain of $1,000,000 in the production seems all the more remarkable.

As has been the case for the last few years, Ohio leads all the other states in the production of pottery, the valuation being placed at $14,775,265. New Jersey is second with a production of $8,401,941 and West Virginia third with a production of $2,880,202 and Indiana fourth with a production of $1,004,737.

All of these states made gains for 1911 over the production of 1910, but the largest increase was made in Ohio, the gain being $480,553. West Virginia gained $204,714, and Indiana $48,033.

The total production in New Jersey, however, shows a loss in 1911 over that of 1910 of $186,514. Other states which lost in production are Arkansas, Colorado, Kentucky, Massachusetts, Missouri, Pennsylvania, South Carolina, Tennessee, Virginia and Wisconsin.

Increased Production of Sanitary Ware.

The gain in Ohio is attributed to the increased production of sanitary ware, electric porcelain, stoneware and art pottery, while the gain in West Virginia is attributed to the increase in the production in the sanitary pottery industry in the vicinity of the Wheeling district. At Sebring, O., a new general ware pottery has been placed in operation, and this has added to the production of general lines.

In Pennsylvania an additional plant has been started in the Cannonsburg, Pa., district, while a loss in production is noted in the Kittanning territory because one plant there has been closed.

The consumption of general ware of American manufacture is increasing annually, and those plants in this line of business are being given business from jobbing interests that heretofore carried large stocks of imported wares.

New York's Production Valued at $2,178,364.

New York last year showed a production in pottery valued at $2,178,364, and the bulk of this business has been done in the Syracuse and Buffalo districts. While there are a few art potteries in New York, the volume comes from these two places.

There has been a decided increase in the production of stoneware in all the states, but as a matter of fact the largest growth is reported from the Zanesville, O., territory.

These statistics show that the American production of pottery in all lines continues to increase as the years advance.

Evangelist "Billy" Sunday, the former baseball player, who is scheduled to start a series of meetings in East Liverpool during the coming week, has his "tabernacle" built on the site of the old "Mansion" Pottery, which is owned by the Croxall Pottery Co., manufacturers of yellow ware. This was the oldest plant in East Liverpool. It has been razed. The original potter's wheel which was in this plant has been placed in the Carnegie Library in East Liverpool, for the benefit of the "rising" generation.

William H. Griggs, general manager of the Anchor Pottery of Trenton, N. J., who has been visiting in East Liverpool for a fortnight, has returned to his home. Mr. Griggs was formerly in charge of the Taylor, Smith & Taylor Pottery and the Smith-Phillips Pottery in East Liverpool.

The capital stock of the C. W. Stine Pottery Co., at Zanesville, O., has been increased from $10,000 to $40,000. The company is increasing its capacity, and plans to manufacture a new line of stoneware pottery.

The plant of the New Castle Pottery Co., which was recently bought by the Shenango China Co., of New Castle, Pa., will not be operated by them until about the year's end. Many improvements are now under way.

FATE EQUIPMENT FOR PENITENTIARY.

August Not a Dull Month From the Machinery Man's Standpoint—Many New Plants Equipped.

When the state of Michigan decided to equip the penitentiary at Jackson with one of the most modern brick and tile plants to be found in the state, the warden, Nathan F. Simpson, after a great deal of deliberation and consultation with a number of experts, awarded the entire contract for furnishing the complete equipment of machinery for manufacturing brick, tile and hollow ware, to the J. D. Fate Co., of Plymouth, O.

The Fate Company also received an order, recently, from the Alberta Clay Products Co., Medicine Hat, Alta., which owns one of the largest plants in the Province, for a Premier special fireproofing machine, dies and automatic cutting table. Another order was from Neilson & Co., Winnipeg, for a special hollow ware machine for making both hollow ware and side-cut brick. Dies and a Bensing side cutting table were also included in the order. One of the Fate combined machines was recently shipped to the German-American Stoneware Co., Phoenix, N. J. Other orders received include one from the Diehl Pottery Co., Rockhill, Pa., for a combined machine, special grinding machinery, automatic cutting table, etc., for its roofing tile plant. Another order was from the Laprairie Brick Co., Laprairie, Que., for two Bensing automatic side cutting brick tables. A recent shipment was made to the Sacramento Clay Products Co., Sacramento, Cal., of a large special automatic brick table with extra cutting chain for cutting large hollow block. Another complete outfit of machinery for brick making consisting of a special Premier machine, auto side cut table, hollow block table, large special disintegrator, crusher, elevators and complete plant equipment was shipped to the Barr Clay Products Co., Wanamingo, Minn. A recent order was received from the Goodhue County Clay Co., Cannon Falls, Minn., for a special Premier machine, side cut auto table, special machine for disintegrator, Justice even roll pressure clay crusher.

Notwithstanding the fact that August is considered a dull month, the Fate Co. has had an unusually busy month, and has much more work in sight.

Chas. Sumner, fifty years ago, voiced the sentiment that "The two greatest forces in the advancement of civilization are the school master and good roads." This has been emphasized by the experiences of intervening years and points to the wisdom of the union of educational forces for aggressive action for permanent roads and streets.

"CERAMIC MATERIALS."

"Ceramic Materials," a late edition which the Roessler & Hasslacher Chemical Co. has been distributing to the trade, is an unusually neat and attractive catalog, bound in red morocco with gilt lettering. It is conveniently arranged and gives a complete list of the materials which the company carries, including specialties such as gold, silver, platinum, etc., and colors for use in all kinds of clay products.

Blank pages, opposite the prices lists, are furnished for the customer's convenience in listing his wants. In the back of the book valuable information as to the uses of metal pyrometers and seger cones is given as well as tables of international atomic weights and measures with convenient multiples for conversion.

Motor Gears.

The R. D. Nuttall Co., Pittsburgh, Pa., is getting out some attractive post cards, the decorative feature being a photograph of a handsome young lady which could not fail to attract attention. The card further calls attention to the Nuttall forged steel motor gears which are a vast improvement on the cast iron gears used more than 20 years ago. The severe service conditions met with in the clay business call for the strongest gears possible to manufacture, and the Nuttall Co. has paid especial attention to the requirements of clay manufacturers in this regard.

Strongest and Most Lasting.

The colors made by the Ricketson Mineral Paint Works have been used with marked success for many years by manufacturers of clay products, both in the United States and abroad. Many unsolicited letters of commendation from satisfied users of these colors have been received by the company among these being the one below:

> "As to the quality of those colors of yours which we have been using we must say they are the strongest, most lasting and the most perfect we have ever used in any of our work.
>
> "We have just completed a retaining wall put out of concrete blocks in the facing of which we used your brown mortar color and we have had more compliments over that wall than any piece of work we have ever done, all because of the color.
>
> "We will be very glad to have you refer to us any prospective purchaser."
>
> Watson Cement & Coal Co., Lima, Ohio.

Are you using the columns of your local paper in your advertising campaign? If not you are losing a golden opportunity to educate the people in your community to the importance of fire prevention by the increased use of burned clay building materials.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

The Fresno Brick & Tile Co., of Fresno, Cal., after thoroughly testing burners of various types, placed with Tate-Jones & Co., Inc., Pittsburgh, Pa., an order for sixty burners for equipping its kilns. A large shipment also has been made by the Tate-Jones Co. of a complete oil burning equipment for brick kilns to Atlanta, Ga.

V. H. Hughes, E. M., was recently appointed assistant state geologist of Missouri. The State Bureau of Geology and Mines has its headquarters at Rolla, Mo.

P. Kirkegaard, president of the Weston Brick Co., of Weston, Canada, is remodeling his plant and expects to install a steam shovel. The company's headquarters are in the Quebec Bank Bldg., Toronto.

The Oliver Springs, Ky., Coal & Clay Co., whose plant was described in a former issue of this journal, is now building its sixth kiln. Other improvements added include kiln sheds, office and stables. The new management is pushing business and we understand is making a decided success of the proposition.

We are informed that the firm of Bugenhagen & Turnbull, architects in the Willoughby-Sumner Building, Saskatoon, Sask., Can., is promoting a company for the establishment of a brick plant.

The Denbigh Pressed Brick Co., Denbigh, N. Dak., is enjoying a prosperous season. Recently the company received an order for 75,000 brick and the next day had the first car of goods delivered on the grounds.

The Midwest Clay Mfg. Co., of Wahoo, Neb., is to use electric drive for running the machinery at its plant, but will not use electricity for burning, as was stated by a correspondent in a recent issue of this journal. The plant is about ready for the installation of the machinery, and soon operations will be begun in earnest.

James F. Freeman, Lawrence, Mass., recently secured a patent on his brick cleaning machine. The machine, which is operated by gasoline, will, it is claimed, clean 20,000 brick a day, scraping all the mortar off without injury to the brick. Formerly by the hand process a workman could clean but about 1,000 per day, and many brick were destroyed in the process.

The Kreischer Brick Mfg. Co. has secured offices on the sixth floor of the Fifth National Bank Building, corner Twenty-third street and Lexington avenue, New York City.

The business of the Newport (Ky.) Brick, Coal & Supply Co., including its new plant with a capacity of 25,000 brick per day, has been purchased by the Marion Allen Supply Co., of Cincinnati.

The new plant of William H. Grothe, at York, Pa., will soon be placed in operation. The plant equipment will include a Henry Martin Brick Press and a 200-h. p. engine. Work on the third kiln is now in progress.

The Citco Brick Co., Chattanooga, Tenn., reports building prospects unusually bright in Chattanooga, an unusually large number of the new buildings being of brick construction.

A new plant which will mean much for Greensboro, Ala., is that of the Thomas & Deas Brick Co., which has only recently begun operations. This plant is equipped with modern machinery for brick making, and is able to turn out a finished product at a very low cost. The first burning of 200,000 brick was sold at $7.50 per thousand, and orders are booked for some time to come.

The porcelain factory at Medicine Hat, Can., is almost completed, and in about two weeks will be ready for the installing of the machinery, three carloads of which have already arrived.

J. W. McIntyre will be the business manager, and W. E. Clark, who is well known as an expert hand at the work in Ohio, is to be in charge of the manufacturing end of the concern.

Local brick dealers at New Britain, Conn., report a shortage in brick facing them at the present time. One of the leading brick manufacturers in that section said that in all his years of experience in the brick business he never before knew of such a shortage at this season of the year.

The Thomas Moulding Co., Chicago, Ill., has changed its name to the Thomas Moulding Brick Co.

The pressed brick plant at Canandaigua, N. Y., is being dismantled and moved away.

The Montrose (Col.) Brick & Tile Co. is getting into shape to secure and install its machinery, and operations are to begin within a short time.

Thirty thousand tons of terra cotta tile were used in the fireproofing of the new Woolworth Building on Broadway, New York City.

W. A. Sage is the new superintendent at the Continental Brick Co.'s plant at Aledo, Ill.. Mr. Sage is a competent superintendent, having been with one firm 17 years and had been in charge of the manufacturing end of a big Indiana yard for 14 years.

The Illinois Brick Co., Chicago, Ill., is reported to have done an unusually large business in July and August, and to have earned its 4 per cent dividend for a year in those two months.

For the purpose of centralizing its administrative department, the General Electric Co. has been granted permits for the erection of office buildings at the River Works in Lynn, Mass., and at once will begin the erection of a four-story frame brick structure. Another application has been granted for a steel foundry building to be built of the same material as the new office building to be erected at the foot of Light street. A sub-office building will also be erected in Federal street, near the present West Lynn plant, and will have a covered bridge connecting with the adjoining buildings.

The Washington Brick, Lime & Sewer Pipe Co. of Spokane, has recently secured the contract to furnish its red mansion brick for the Warner apartments in Portland.

The Eastern Terra-Cotta, Brick & Tile Co., 327 Old South Building, Boston, Mass., says it has some large orders to place for structural terra cotta, and asks for the names and addresses of manufacturers in Ohio and Pennsylvania. Pottery interests should lose no time in writing them.

Twenty-five members of the Civil Engineers' Society of St. Paul, including City Engineer Claussen, were recent guests at the Twin City Brick Co.'s plant. The trip, which is the first of a series which have been planned for Saturday afternoons, was made in automobiles. George Rathjens, engineer of the brick plant, showed the visitors the mysteries of making brick and tile.

Christ Rich, who has for some time past been connected with the Bessemer Limestone Co., of Bessemer, Pa., has severed his connection with that company and is now burning for the Orchard Park brick plant at Orchard Park, N. Y.

The Lewistown Brick & Tile Co., Lewiston, Mont., is experiencing a most successful season, and the demand for its product is so great that enlargement of its plant facilities are required. In order to meet the demands the erection of two new kilns has just been decided upon. One will be a dry kiln and the other a down draft.

Martin T. Roche, formerly president of the Northern Brick & Supply Co., St. Paul, Minn., has retired from that company. Mr. Roche has taken over the company's business in Minneapolis and will operate in that city under the name of the Martin T. Roche Brick & Supply Co.

NEW PLANTS AND ADDITIONS.

The New England Brick Co., of Unionville, Conn., expects to install a power driven scraper and excavator for procuring sand for its sand lime plant.

The Winfield Pottery Co., of Winfield, Texas, has been incorporated with a capital of $60,000, by P. H. Miller, A. N. Holmes and J. C. Glass.

The Bladen Brick & Tile Co., of Elizabethtown, Ky., has been incorporated with $50,000 capital stock.

The Modern Tiling Manufacturing Co., of Knoxville, Tenn., is among the recently incorporated plants. The capital stock is $100,000.

East Liverpool, Ohio, capitalists, interested with Washingtonville, Ohio, capitalists, are proposing to erect a five-kiln pottery plant at Washingtonville to cost $40,000 and $20,000 already has been subscribed.

Fire destroyed the plant of the Portland Stoneware Co., of Portland, Me., August 27. Edward B. Winslow, president of the company, in an interview the day following the fire, declared that work would begin immediately on the rebuilding of a modern pottery plant.

Dr. H. J. von Hagan, president of the North Shore Railway and Navigation Co., at Beersville, Kent County, New Brunswick, Canada, makes the statement that his company intends to begin the manufacture of brick next spring from a most excellent deposit of clay found on its property. Aside from the coal and the brick clay on the property Dr. von Hagan declares there are indications of oil and gas also.

The Guastavino Tile Co., of Woburn, Mass., is adding extra storage capacity.

With the completion of a new five-story building which is about to be erected, the capacity of the Trenton Fire Clay and Porcelain Co.'s plant at Trenton, N. J., will be doubled. Work on the foundations for the building are now under way and the operation will be completed before cold weather sets in. The structure is to be of brick, absolutely fireproof, with a steel frame embedded in concrete. The cost will be about $50,000.

THE EAST.

New York, Sept. 12.—The tightness of the steel market, here in the east, with the resultant delay in shipments of material for skeleton buildings has caused a marked slump in the common brick market. Sales during the last fortnight have fallen off about half and the inquiry is nervous and timid. Prices, instead of bordering on a general advance, have become weaker at $6.75 to $7 per thousand, wholesale, for both Hudson and Raritans, while Connecticut brick have been taken out of the market almost entirely, and the Long Island demand is nil, save in local centers.

Another factor which further intimidated prospective purchasers was the strike of the excavating cartmen which, in turn, caused a stagnation of inquiry and delivery.

Front brick, on the other hand, is moving regularly because neither of these elements have any bearing upon structural work which is in process of completion. Agents here report a good demand, even though the season is rapidly drawing to a close. Enamels have some call but nothing conspicuous. The strongest department in front brick is rough faced material for façade work.

Fireproofing material and partition blocks are also active and there does not seem to be any hesitancy on the part of producers to receive inquiries and take new contracts well into the winter.

In the North river territory the situation is almost acute. The sales market is being actively manipulated and those "foreign" companies specializing on direct sales to big consumers are reported to be doing boom business.

Hudson river manufacturers have been complaining that the prices they are getting for their products are not high enough in view of the fact that the output this year has been very light. On the other hand the dealers here have been doing their best to force the prices lower. The result is that distributers have been between two fires and it has taken Herculean efforts at times to keep the market from inflation on the one hand and disruption on the other.

A study of new building plans filed in all boroughs during the last five weeks reveals the true status of affairs. They have fallen off almost fifty per cent compared with the filings of a corresponding period last year, not because projects have been abandoned, but because money has been hard to get, until the last two weeks, when the western demand subsided somewhat, following the completion of crop harvesting, and because of the enforcement of the encroachment ordinance. Today money is more plentiful here and lending companies have let down the bars again and are taking engagements for next year's operations.

The demand for common brick should therefore improve after the fifteenth of this month and this is the foundation of the firmness maintained by distributers in regard to the present price levels.

Labor Scarcity Reported.

Plants, up the river, which have from eight to twenty machines, operated less than half their capacity in many instances this year because they could not get labor enough, regardless of the fact that wages offered have been higher than they were last year. Should higher prices be quoted on this market now, barges would be tied up and heavy losses would be incurred at a time when brick shipments should be active in view of the approach of the winter season when shipments are few and far between. The market is in no mood to suffer higher prices now, regardless of whether the manufacturers are making or losing money.

Should the dealers prevail and force prices lower, there would be sure to be a general stacking movement here, which would soon deplete the present Hudson river stocks so that famine conditions might prevail in March and April.

Hudson river manufacturers should remember that the Raritan plants are operating nearly to capacity and that they have about all they can do to keep up with the demand as it is even now. This is keeping the market conservative at the most critical time in the history of eastern brick manufacture.

Metropolitan Market Sound.

The metropolitan market in general is sound. There is nothing to be alarmed over. On the contrary, everything points to remarkable activity all during next year. I am informed by one of the leading statistical agencies here in the east, that the inquiry for construction for next year is far heavier than it has been in five years. Further confirmation is found in the behavior of the steel companies, which are the foundation of all movements relating to future building activity. Local officials tell me that they have been turning down speculative steel inquiries running well into the middle of next spring, so that A. No. 1 building orders may depend upon deliveries. Another evidence of the stable condition of the building market now is the fact that producing centers are reporting little stock on hand, that no single industry is running to over production, because all stocks are being taken as fast as they are ready for market. Even Portland cement, which has suffered from over-production for the past six years, is being taken as fast as the mills can turn it out, despite the fact that the big Panama consumption is reaching its end.

True, prices have risen in all these lines, but are not the manufacturers of common brick getting more for their product than they did a year ago? It is noticeable that none of the other industries are arbitrarily advancing their prices. In addition, it should be recalled that brick anticipated the present rise in prices almost a year ahead of any of the other basic building material interests.

This is not the time to clamor for higher prices. The time to demand higher prices is when the demand warrants it. Advances inspired by any other consideration has one effect; namely, to incur the protest of consumers and to disrupt the market and drive trade elsewhere.

Connecticut manufacturers, for instance, have been improving the quality of their brick. They have been putting in modern equipment, and they have reduced their mining costs. If the price here went up another quarter a thousand, these manufacturers would swoop into the market and the Hudson river manufacturer would have to fight both the Raritan river and the Connecticut supply.

As it is there is room for all in the present market and manufacturers would do well to let the market alone. The dealers would like nothing better than a chance to corner the Hudson brick market because they are in a position to know what the winter inquiry will be, whereas, the manufacturer's only gage of the market is the rapidity with which his brick sell and the prices he gets for his product. The price, as it now rules, may not allow a very high margin to the manufacturer in view of the high prices he has had to pay for labor this year, but few complain of actually losing money, which was the basis of everybody's grievance last year.

CHICAGO.

Chicago, Sept. 12.—The extreme heat during the early part of the present month did not materially affect the conditions in the building trades locally. There was a slight decrease during the latter part of August, as is customary at that time of the year, but the increase in the first part of the present month served to balance the scales.

In the opinion of many clay men, the present has been one of the most notable years in the history of the city, in so far as the demand for building material has been concerned. The contrast with a number of other lines of business makes it all the more marked, and for this reason there is a feeling of gratification on the part of all the manufacturers and dealers as well. The demand has been for all kinds of materials and for every class of structure. The outlook for the fall months is favorable and there is, depending upon the weather to some extent, a prospect for a continuation of very active business for some time to come.

The building brick plants are rushing to fill orders. There has never been a season when the demand was as active, and there will be some difficulty in storing many brick this fall if the demand continues strong. The plants have been operating to capacity for months. Some trouble has been experienced in shipping, on account of shortage of cars, and the indications are that it will not be lessened for a few months now.

The railroads are moving large quantities of grain, and as the crop is very much in excess of past years, there has been an extra effort made by the roads to provide as many cars as possible for the purpose.

Many cars are tied up in the west and northwest and there seems to be little hope for an improvement for the next month or so at least.

In some respects it is remarkable how much there has been accomplished in a building way during the past six months. While no figures are given out as yet with regard to the totals, it will be safe to say that this has been the best and biggest year in the history of Chicago. Included in this record is that of Chicago's many suburbs and the new towns nearby. There has been, virtually, a building fever, which has spread in a remarkable manner.

We hear much of the desire to get away from the city and back to the soil, and still there is a continued increase in the building of apartment houses, business blocks, stores and factories, which with the skyscrapers, has made such a vast volume of building as to puzzle supply men to furnish sufficient materials to keep the ball rolling. The building of the modern city makes a big demand for all kinds of clay products.

Sewer pipe have been holding up well, and the prices advancing in the past month has been a stimulant to a better demand. This result might have been secured several months or a year ago if the manufacturers had been wise enough to advance their quotations at that time. There is a shortage reported in the smaller sizes, the demand is still strong for those sizes, and sewer pipe manufacturers feel much pleased with the indications.

It has been found that the wood block pavement in London, Eng., has been a failure. Not only have the block been found to be short lived, but they have been declared to be unsanitary, as they accumulate filth and dirt. They are unreliable in winter, and unsatisfactory in summer. While the creosoted block have not long been in use in Chicago, they have been proven undesirable in a number of respects. Particularly is this true in the winter months when the horses slip and fall on them continually, and in the summer when the tar is very objectionable.

At the office of the S. S. Kimbell Brick Co. reports were favorable and the company has much to feel thankful for in the way of orders. The past demand had been very brisk and the outlook for the fall is all that could now be hoped for.

The Curtis Brick Co. has had a steady demand for its product for several months, and now that the rebuilt plant which replaces the one damaged by storm several months ago, has been placed in operation, the company is enabled to turn out more brick than formerly. The company anticipates a big fall demand, and so far has been able to store very few brick.

The Chicago Sewer Pipe Co. finds the demand for pipe brisk. The advance in the price has stimulated trade and a nice fall demand is in prospect.

The Thomas Moulding Co. is pleased with the amount of business done in the past few months, and while there was a slight decline noted in August, this is not considered out of the ordinary and a big increase is looked for, until late in the fall.

The Midland Terra Cotta Co. has been about as busy as it could possibly be and is continuing to fill orders. This has been a very active season with this company, and it expects a steady demand for some time as yet.

Mr. White, of the Jenkins & Reynolds Co., states that the past season and the present outlook is the best ever noted in the face brick industry. He says that the demand for face brick in this section is showing an increase all the time, with the best possible indications for a bright future for the industry.

Mr. Busse, of the National Brick Co., says the demand for building brick is quite active. The past season has been an excellent one for the National company and the indications point to a continued brisk demand for the remainder of the year.

The Bonner & Marshall Co. is satisfied with the season's business and while the slight dullness of midsummer was felt to some extent the prospects for fall business are good.

Thos. Connelly says that the car shortage is the most serious thing that he is facing now. Orders for sewer pipe are large, but there has been serious difficulty in getting as many cars as he would like, and on this account he has been somewhat handicapped in doing business.

The Northwestern Terra Cotta Co. has been so much on the jump this year that there has been little room for complaint on any score. Orders from many sections have kept the large plant of the Northwestern Terra Cotta Co. very busy and the outlook is good.

The Hydraulic Press Brick Co. is pleased with the strength of the demand for face brick. Business has continued steady with the company and the outlook is fine.

LOUISVILLE, KY.

The clay-working industry in Louisville and Kentucky is enjoying an enviable position. Demand is so pressing the craft is experiencing occasional trouble in satisfying its many patrons. It seems that everything from a joint of sewer pipe to a million of brick is just what the construction men are waiting for. The sight of a kiln full of brick weeks after it had been burned and cooled, such as there used to be, would be an oddity nowadays, for building contractors scarcely can wait for the products of the furnace to cool before they want them on the ground.

The heat of a record-breaking building year, tempered by weather which has been cooled to a nicety during what are normally the fiercest months of the year, is providing the clay-workers with a season that they never will forget. The only difficulty in the industry these days is in delivery. Everybody is calling for teams. Brick men lumber men, sand men and supply men are uniting in a mighty wail for plenty of live stock and rolling stock. Premium rates are being paid for rented equipment, stable owners finding it easy to command $5 and $6 per day for outfits which may have seen service in the Civil War, if appearances count for anything.

But after all the brick men say, worry of this sort is about as nearly nothing at all as any unpleasant factor that can be imagined. The fact that the business is there is preponderent. If contracts were few and far between, the trade would indeed have something to worry about, but scarcity of teams is something to be circumvented in devious ways. Although there are no motor trucks in use at present in the local field, the adoption of this strictly twentieth century improvement is not an impossibility as matters stand. The builders must have brick.

July was a wonder in the Louisville building world. The total value of permits issued during that month by Inspector Robert J. Tilford exceeded $1,000,000, an aggregate never before touched by the month in the annals of the inspector's offices. That a mid-summer month should provide a bumper volume of work was to be expected, but that it should shatter all records is a matter of jollification in every branch of the structural trade.

The clay-working interests of the Getaway City have every right to feel that they would indeed be lost without a couple of big sky-scrapers on their hands. For months past there have been from two to five big structures in course of erection, their predominance serving to boost a fine aggregate of smaller work to record-breaking terms. August has proved no exception to the rule of 1911-1912.

The Selden-Breck Construction Company, of Louisville and St. Louis, has received the general contract for the erection of the Starks building, a mammoth 15-story structure on the northeast corner of Fourth Avenue and Walnut street. This site was purchased some time ago by John P. Starks for $350,000, the transaction boosting it to the position of the most valuable unimproved property in Louisville's retail business district. It is but natural, therefore, that the syndicate headed by Mr. Starks should choose to spend more than $600,000 in the erection of a handsome office and store building on the corner. Nearly a year's time will be required to complete the structure, which is to be of steel, brick and stone, the biggest building in Louisville. The foundation is now being sunk.

The newest in the chain of 1912 sky-scrapers in Louisville is to be located on the northwest corner of Fifth Avenue and Green street. J. D. Wright, a well-known local real estate man representing Chicago interests, has leased the property and is employing Architect Henry Wolters to draft plans for a $300,000 14-story office building. The structure will front 100 feet on Fifth avenue and 54 feet on Green street, with walls of pressed brick from the third story to the roof. The work is to be started in the near future.

The Hydraulic Brick Co. of Louisville, has not completed the winding up of its affairs preparatory to withdrawing from the local trade. Antoine Dumesnil, president of the company, is now in charge and as soon as its collections have been closed, the offices at 1329 South Twelfth street will be vacated and the Hydraulic will be a matter of history. It is expected that another month, or until about October, will be required to complete this work. The company still holds two valuable yards, one at Twelfth street and St. Louis avenue and the other at Lochland, Ky., eight miles distant from Louisville on the Knoxville division of the Illinois Central railroad, and proposes to dispose of them as soon as possible. The Eastern Yard, on the Poplar Level road, has been sold, and is now being operated by the Hillenbrand Brick Manufacturing Company. C. A. Stout, who for the past eleven years has had charge of the collections and sales departments of the Hydraulic Brick Company, has severed his connection with that company prior to its withdrawal from the trade. Mr. Stout has assumed duties corresponding to those in which he is experienced with the Ohio River Sand Company, one of the biggest and best-known sand concerns in Louisville. He is a pioneer in the Gateway City building field and is regarded as one of the best-posted men in Kentucky upon general construction.

The East End Brick Co. is running full time and does not anticipate anything but crowded schedules for months ahead, according to Secretary-Treasurer R. B. Crane. The company has booked orders for the future delivery of more than 2,000,000 brick, and has been kept fully occupied during the month just passed. It is not expected that the Kentucky Distilleries & Warehouse Co.'s job, upon which the East End concern has been working for nearly a year, will be completed until the first of October. The company is also delivering to St. Bridget's Roman Catholic Church, a local edifice now in course of erection, and is furnishing the brick for the remodeling of the wholesale millinery house of David Baird & Son, which was gutted by fire several months ago.

The Builders' Exchange of Louisville will revel in the open Labor Day, Sept. 2. On that date the members of the well-known allied trades body will adjourn to Hike's Point, where a memorable celebration will be enjoyed. Anyone who has ever attended an Exchange outing which, like other festive occasions, comes but once a year, possesses an ineffaceable memory of the feature. Good cheer abounds and, as for athletics, there is a unique ball game, in which a tub of bottled beer, pop and other soft drinks graces second base, for the edification of all fortunate players reaching that station. A banner crowd of brick men and others is assured for the coming picnic.

The Hillenbrand Brick Manufacturing Co. has started active business at the big Eastern Yard on the Poplar Level road, which formerly belonged to the Hydraulic Brick Co. The Hillenbrand company is well known, having operated at times during the past twenty years, in the local field. It founded the old plant at 119 Spring street, which was later taken over by the Falls Cities Brick Manufacturing Company, a concern which went into bankruptcy several years ago. A. P. Hillenbrand, Sr., is president of the company. A maximum capacity of 30,000 brick per day is the rating for the Eastern Yard, and Mr. Hillenbrand is not experiencing the least difficulty in disposing of every burn.

The Southern Brick & Tile Co. has been delivering about 25,000 red brick per day for the past six weeks to the A. Bentley & Sons Company, of Toledo, O., the contractors in charge of the erection of the new $1,000,000 City Hospital in Louisville. This feature alone has been sufficient to keep the Southern force busy ten hours a day, and other work in hand upon the Oakdale School and the Lincoln Institute at Simpsonville, Ky., has served to suggest over-time operations. T. Bishop, president of the Southern Brick & Tile Company, is finding plenty of drainage tile work these days, so that this department of his plant does not suffer in the least in comparison with the noticeable boom of brick. Mr. Bishop closed a fine contract not long ago for considerable tile and setting to be done on the Patterson estate near Shepherdsville, Ky.

A campaign of aggressive advertising is featuring the operations of Owen Tyler, one of the best known brick men in the Louisville trade. Mr. Tyler recently called the attention of the public to the fact that a special treatise for the edification of home builders has been prepared upon clay products. "The Building Brick Association of America," his ad asserts, "recently offered $1,000 in prizes for the best architectural designs of a brick residence. Forty-one of the best designs were selected and published, with descriptions, in a book, 'A House of Brick.' This book will be of great interest and value to you and your architect in the preparation of plans for your new home. When you build, use brick." Mr. Tyler is commencing shipments of fine gray brick from the Brazil Brick Co., of Brazil, Ind., to the A. Bentley & Sons Company, of Toledo, Ohio, contractors, erecting the new $1,000,000 City Hospital at Floyd and Chestnut streets.

The Modern Construction Co. has filed articles of incorporation in Louisville, Ky., placing its capitalization at $10,000, to engage in the manufacture of tile and kindred lines of clay products. The maximum indebtedness of the new concern is placed at $10,000, and its incorporators are F. S. West, Albert S. Owen and F. C. Goodwin.

The Board of Public Works of the City of Louisville has brought suit against L. R. Figg & Co. in Judge Quarles' court seeking to make the brick paving contractors back up their guarantee of five years upon two blocks of brick street laid by them along Seventh street, between Broadway and Walnut, two years ago. The municipal authorities allege that the work in question went to pieces within six months after it was completed. The brick pavers assert that better work was impossible under the specifications furnished. The city seeks to refute this allegation with evidence of thirty-eight other sections of street which are giving good service and which are said to have been set under precisely the same specification. The suit pressed by the Board is the first of its kind to be brought in Louisville and a victory for the city, it is predicted, will make paving contractors more careful in their work henceforth. The Figg job which is contested cost $13,000.

Marshall W. Neal, vice chairman of the Board of Public Works of Louisville and other officials of the city recently returned from a paving inspection trip through Cleveland, Ohio, Terre Haute, Ind., and other brick paving centers. The journey was made with the view of gathering ideas which may result in Louisville securing better paved thoroughfares in the future, for the working life of brick pavements here has averaged considerably under what it should. The prime point of difference existing between local paving and that in recognized centers for this work, such as Cleveland, lies in the grades of filler used, according to Mr. Neal. The Buckeye city of famous streets advocates hard filler, as differentiated from the thinly-spread cement filler which is said to be responsible for the defects of Louisville's thoroughfares in the past. It is probable that material changes in paving specifications will be made by the municipality hereafter, compelling contractors to do work that will uphold the acknowledged excellence of brick.

The River Brick & Tile Co. has been incorporated in Stanton, Ky., with a capitalization of $10,000 to engage in the manufacture of brick and tile. The incorporators of the new concern are H. T. Derrickson and G. W. Conlee.

Carlisle, Ky., suffered a disastrous fire not long ago which gutted a couple of blocks in the little city's retail business district, the loss reaching into tens of thousands of dollars. As a result of the catastrophe, the municipal authorities have enacted a law providing that all re-built structures in the burned area shall be of brick, for frame structures fell prey to the flames and the city has been taught a lesson.

The new city of Jenkins, near McRoberts, Ky., boasts a brick plant with a capacity of 25,000 brick per diem. The wonderful growth of Jenkins, which was a virgin forest a year ago, is typical of the expansion of industry in Kentucky's coal fields. The Consolidation Coal Company has founded the city and its employees are building comfortable homes of a permanent nature.

The Spahr Brick Co., of Maysville, Ky., has been incorporated with $50,000 capital stock by A. C. Spahr, N. S. Spahr and A. S. Clark. It is a going concern and has been in business for years.

The Ashland Brick Co., of Ashland, Ky., has reopened its plant for business in that city, after having suspended operations for some time. John O'Kelly is in charge of the company under its new management.

Brick is to be the paving standard in Danville, Ky., henceforward if the business men of that city have their way. A campaign has been started in the county seat of Boyle county to erect several miles of up-to-date vitrified thoroughfares for, it is pointed out, Winchester, Nicholasville and other bustling Kentucky cities boast the improvement and Danville should not be allowed to come limping in the rear. The improvement is to be made as soon as possible.

The Miller Brick Co., of Cloverport, Ky., has disposed of its plant to a wrecking company of New Albany, Ind., and a portion of the property is to be dismantled and removed from Cloverport at once. It is asserted, however, that kilns will be left standing and that machinery will be left for operation so that Cloverport's brick demand may not go unsatisfied.

The Central Construction Co., of Lexington, Ky., has been awarded a contract to erect more than 5,000 square yards of brick paving in Mt. Sterling, Ky., at a cost of $2 per square yard. The work of supplying Mt. Sterling with modern vitrified streets is to commence at once and must be completed by December 1, finishing a section of setting in the business district of the city.

The Rapid City Brick & Tile Co., of Nashville, Tenn., has been incorporated with $25,000 capitalization to engage in the manufacture and sale of brick and tile. The incorporators of the new concern in the Tennessee capital are Harry L. Bevan, R. O. Tucker, W. M. Shipman and others.

Articles of incorporation have been filed by the Roach-Manigan Paving Company in Memphis, Tenn. The company is capitalized at $98,000 by Edward J. Manigan, Michael J. Roach and Lewis T. Kavanaugh.

SCHENECTADY, N. Y.

Schenectady, N. Y., Sept. 9.—The brick business around here has been rather slow the past few years, owing to low prices at which they were sold and the unsatisfactory condition of the market. There is some chance of its showing an improvement this year and plants are expected to operate to the usual capacity with hopes for better business conditions.

Common brick sold here last year for $5.00 to $6.00 per thousand, and sand lime at $6.50 at yard. Considerable of the brick made around here is shipped to Boston; it does not pay to ship to New York City.

This place is called the Electric City, the General Electric Co. and the locomotive works being the largest industries, each one employing about 10,000 hands. The place is growing, presents a good business appearance, and considerable building is scheduled to go ahead this year. This place had a boom a few years ago and is known as a lively business center.

The Thomas Moulding Co., of Chicago, furnished the Indiana texture, rough faced brick, in unusual sizes, 9x2x4 inches, for the $15,000 residence of E. R. Carichof, on Lowell Road.

The Schenectady Brick Co. makes a sand lime brick, but has not been operating for two years. It has about 500,000 brick on hand. Dan Naylon is one of the head men.

UTICA, N. Y.

There will be no bottled up specifications here this year as to street paving, and the field will be open to all and practically any tested and approved pavement will be admitted to the city. Brick has been acceptable here for years and probably will be used more than ever, as it has always given good satisfaction.

The plant of George F. Weaver & Sons, at Deerfield, a suburb, is running again. It makes 12,000,000 common brick a year, and is the largest factory in this territory. They put in Brewer machinery to make drain tile, which is a new line for them, and expect to have quite a large output.

The Utica Brick Co., at the foot of Schuyler street, makes 3,000,000 common brick a year, opened May 1st. They had about 4,000,000 brick on hand at the closing of the plant last fall, considerable of which has been sold. They also make hollow brick and building blocks, have large clay beds and burn coke and coal successfully. Brick sell for $7 in 100,000 lots, but in smaller quantities at $7.50. Henry B. Moore, head of the Fort Schuyler Brewing Co., is the owner of the brick plant.

The Mohawk brick plant, at the foot of Schuyler street, is managed by Mr. Comboy, of the firm of Wells, Ames & Swift Co., lumber dealers. It makes 3,000,000 common brick a year and has had a pile of 74,000,000 on hand all through the winter. It has its own clay beds and burns coal and coke.

Years ago N. A. White used to make fire brick and pottery, but later discontinued manufacturing, but continued to handle these and other lines. The business was bought by McQuode & Bannigan, who are handling clay materials today. They represent the Hayes Run (Pa.) Fire Brick Co.

The Utica Pipe Foundry does no manufacturing, but handles all kinds of clay products.

The Duffney Brick Co., of Mechanicsville, has started up a new brick plant, using coal instead of cord wood. It is a new system which was invented by James R. Smith and installed by James R. Smith & Co., of the same place. The new system is being watched by brick manufacturers and if it proves the success that is claimed for it, will no doubt be widely adopted.

The Hart & Crouse steam heating and furnace company will erect a new factory building at East Utica.

The American Hard Wall Plaster Co. does a big business in handling clay products. Among the firms represented are the following: The American Sewer Pipe Co., Fiske & Co., of New York, tapestry brick; the Alumina Shale Brick Co., of Bradford, Pa.; the Ohio Mining & Manufacturing Co., of Shawnee, Ohio; George F. Weaver & Sons, of this city, drain tile and common brick; Whittaker Manufacturing Co., of Ohio, hollow building blocks; the Enamel Brick & Terra Cotta Co.

The Duffney Brick Co., of Mechanicsville, is officered by J. M. Purcell, president; A. E. Van Vichten, vice president; S. J. Moore, secretary; R. A. Moore, treasurer. They run the year around and have a stock on hand of about 5,000,000 brick.

OHIO.

Columbus, O., September 12.—Generally speaking, the brick trade in Columbus and the Hocking Valley has been active during the past month. There has been a good demand for face brick of all kinds and shipments have been above the average. The demand for common brick has been fair also and the outlook for the future is believed to be good.

Several of the face brick factories in the Hocking Valley have been receiving orders above their capacity and have been behind on shipments. Building operations have been quite active in the cities and towns of the Middle West, and as a result the demand for brick has been good. On the whole it has been one of the best seasons, for years, in the face brick business in the Buckeye State.

The Ironclay Brick Co. which has offices in the Ruggery Bldg., Columbus, and a factory at Shawnee, O., is erecting an additional large kiln which will be finished in about a month. When completed the plant will have 21 large kilns and one small one. The new kiln will increase the output materially.

The McNichol-Corns Co., of Wellsville, Ohio, has been incorporated with a capital stock of $60,000 to manufacture and deal in crockery by A. Elliott Frost, Samuel Frost, A. W. Corns, D. E. McNichol and D. E. McNichol, Jr.

The Champion Brick Co.'s plant at Toronto, Ohio, has been taken over by the Bankers' Surety Co., of Pittsburgh, for $10,350. and it is understood it will soon be placed in operation again. All necessary repairs and improvements will be made at once.

At Logan, Ohio, the plant of the Hocking Valley Brick Co. has been placed in operation after a shut-down of 10 days caused by a break-down in the machinery.

F. H. Kirchner, a capitalist of Cincinnati, has purchased the property of the Fultonham Brick Co., at Fultonham, O., and will put it in condition for operation. A few months ago the plant went into the hands of a receiver and the property was sold at court sale.

The Hardstone Pottery Co., of Circleville, Ohio, has been incorporated with a capital of $25,000 to manufacture and sell earthenware by C. W. Metz, W. F. Gwynn, L. H. Merling, G. W. Coppin and Robert Mitchell.

Ohio is proud of her ranking in the late Government statistics. She headed the list with a production valued at $32,633,895 or one-fifth of the entire amount produced in the United States. This is a record well worth striving for.

INDIANA.

Indianapolis, Ind., Sept. 12.—Building continues to exceed all previous records in this city, and brick manufacturers have practically all of the orders they can take care of at the present time. Prices continue stiff and a good business is anticipated until well into the winter. Terra cotta manufacturers are also having the best business experienced in several years and the sewer pipe people report an improvement in trade conditions in the last month.

The local office of the Western Brick Co. reports a most satisfactory business. It has just closed an order for 150,000 dark brown face brick and 500,000 common brick for the meat packing plant of the Butchers Packing Co. It is also completing an order of 262,000 dark brown pressed brick for the sixteen-story Washington hotel, and of 120,000 gray pressed and 400,000 common brick for the sixteen-story Merchants Bank Building.

William Fogarty, president of the Fidelity Trust Co., has been appointed receiver for the Indianapolis Exhibit Co., which has exhibition rooms for building material and supplies in the Hume-Mansur Building. The receiver was appointed on a suit brought by Eugene F. Harris, an employe and creditor of the exhibit company, who alleges insolvency and mismanagement.

Mr. and Mrs. Benjamin D. Walcott have returned from the Massachusetts coast, where they spent the summer. Mr. Walcott is president of the Indianapolis Terra Cotta Co.

Architects for the Merchants Bank Building, now nearing completion, are D. H. Burnham & Co., of Chicago. The building is of the skeleton steel type, fireproofed with hollow tile blocks, the floors being of the same material, finished with marble. All partitions are fireproofed with the hollow tile blocks, which are of the portable type to permit alterations to suit tenants. The floors are of black and white ceramic tile with Greek borders. The outer walls are of Bedford stone, terra cotta and Kittanning brick. The Hydraulic Press Brick Co. furnished about 400,000 red pressed brick and the Western Brick Co. about 120,000 gray pressed brick and about 400,000 common brick. The terra cotta was furnished by the Federal Terra Cotta Co.

The National Tile Company, located at Anderson, Ind., is at present compelled to work its force on night shifts a portion of the time to keep up with its great influx of orders.

There are five hundred persons on the pay roll and the plant is one of the city's largest industries. Most of its employes are experts in their line and receive high salaries.

The National Tile Company is shipping an average of three car loads of its most expensive tile to Buenos Aires, in South America, every week. In Buenos Aires the expensive tiling, manufactured in the Anderson plant, is used by the wealthy citizens of the city in facing the exteriors of their houses and paving their sidewalks. The terra cotta and ceramic inlay tile designs make beautiful sidewalks and residences. As a result of adopting tile for building, Buenos Aires has gained the reputation of being one of the most beautiful cities in the world.

The average output of the Anderson plant is about seven car loads of tile per week.

The plant is said to be valued at about $1,000,000 by its owners.

George M. Lilley is president of the National Tile Co., Harry Haugh technical manager of the plant, and Mr. Hettel recently of the National Automobile Co., Indianapolis, is superintendent. The plant is the second largest of its kind in the world and ranks first in output of fancy tiling.

One of the largest orders received recently was tile for ten Thompson's restaurants in large cities throughout the country.

Hamlet Brosius of Brazil, Ind., has resigned his position as advertising manager of the Brosius Dry Goods Co., and is now associated with the Ayer & McCarel Clay Co., which company is making extensive improvements to its plant at Carbon, Ind. The Brazil plants are busy and are said to be enjoying an unusually prosperous season.

The Clay Worker's Library

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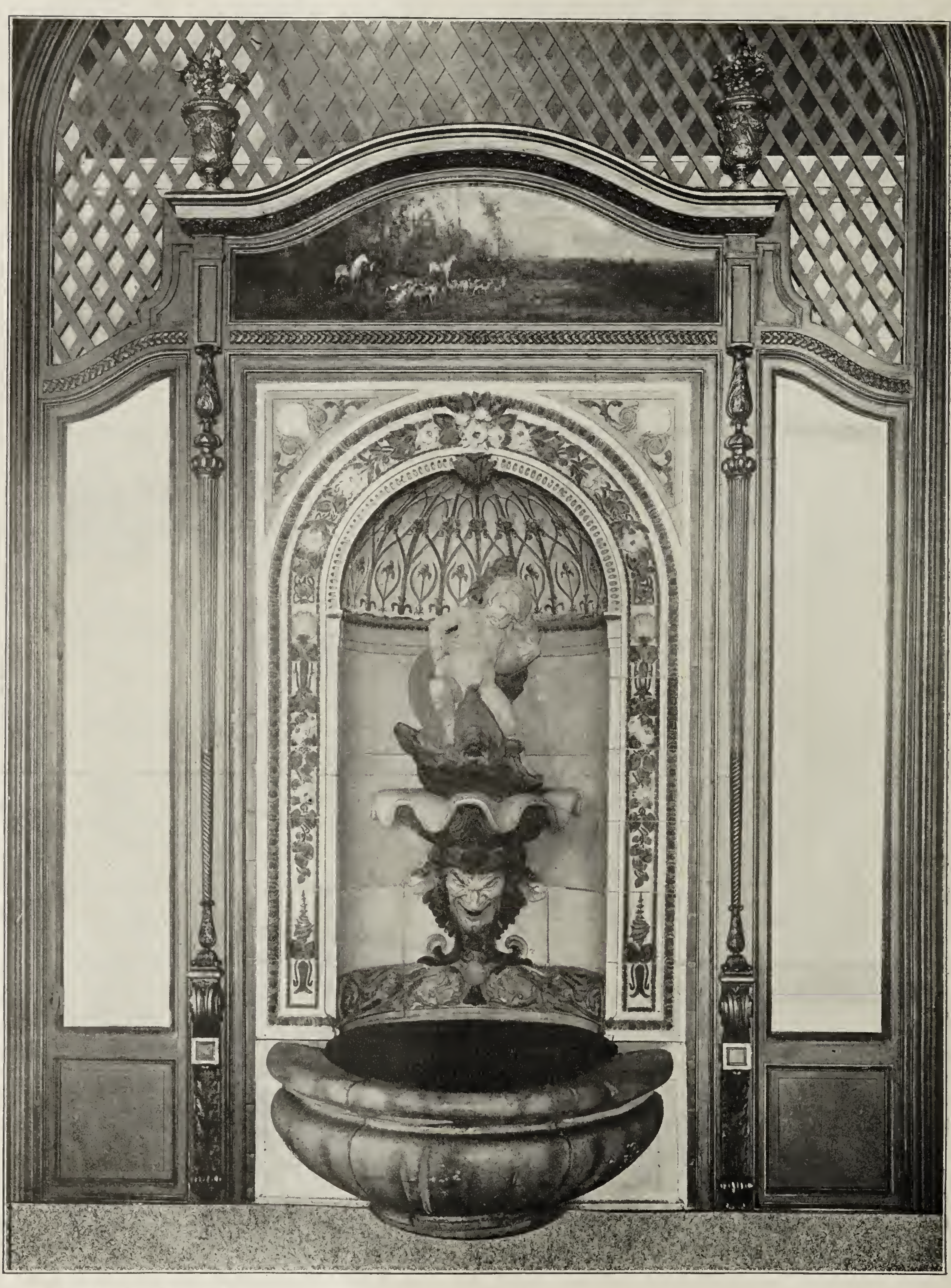
BRICK AND CLAY RECORD, 445 Plymouth Court CHICAGO

ART AND BEAUTY EXPRESSED IN BURNED CLAY



The decorative possibilities of architectural terra cotta are clearly shown in the above reproduction of the handsome fountain, which adorns the Prince George Hotel in New York City. Similar decorations may be found in leading hotels throughout the country.

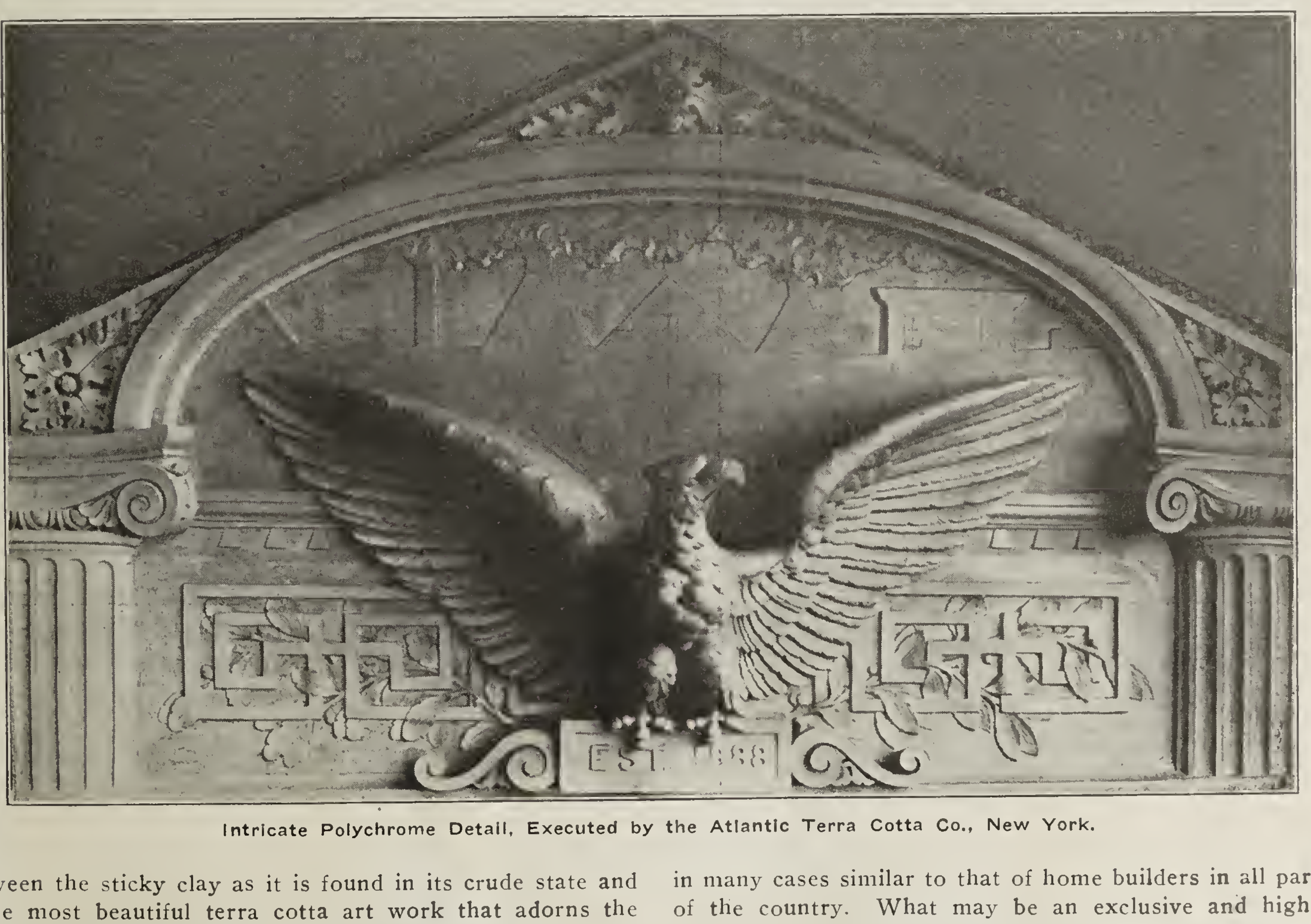
BRICK AND CLAY RECORD
VOL. XLI-No. 7
OCTOBER 1, 1912

THE BUILDING MATERIAL OF THE AGE

Terra Cotta, Most Versatile of All Structural Commodities. Light, Strong, Durable and Fireproof, It Is Fast Supplanting Expensive Carved Stone.

By ALLEN E. BEALS

SINCE the world began there never has been a building material save wood, which has been susceptible of so many applications in the construction of habitations for man as terra cotta as we know it today. In fact, with the gradual elimination of wood, even in small cities and in the more progressive towns of the country, it becomes more and more evident that we are returning to the clay age, at least so far as our commercial and domestic shelter is concerned.



Intricate Polychrome Detail, Executed by the Atlantic Terra Cotta Co., New York.

There would appear to be a far cry, for instance, between the sticky clay as it is found in its crude state and the most beautiful terra cotta art work that adorns the exclusive shops of Fifth avenue, New York, yet even in the realm of craftsmanship, burned clay is making terrific inroads against carved marble and other costly stones.

In the big cities the answer is found in pure economics. In the matter of terra cotta interior decoration, the wealthy man who builded himself a home in Fifth avenue, Madison avenue or Park avenue, a generation ago, indulged himself, if he had artistic tastes, in a very costly carved stone mantelpiece, marble or onyx balustrades and staircases; expensive stone fountains or jardiniers and so on down the line.

Today, when a wealthy man builds a home, he is more likely to order his mantelpiece of glazed terra cotta, and likewise his balustrades and staircase, his fountain, garden seats and flower urns. And the reason is not hard to find.

The experience of the home builder in New York is in many cases similar to that of home builders in all parts of the country. What may be an exclusive and highly restrictive residential section today may, in a generation, be a busy commercial mart. The tone of a neighborhood, in a less congested city than New York or Chicago, is subject to change. Realty valuations are constantly increasing in exact proportion to the increase of population. In order to adapt building to these changing conditions, terra cotta, less costly, but just as beautiful and just as permanent as stone and more fireproof than wood, is gradually taking their place.

The field of architectural terra cotta is constantly enlarging. In such an elaborately adorned hotel as the Prince George, New York, architectural terra cotta has almost entirely supplanted expensive carved stone as a decorative material. In the fountain depicted in the frontispiece, the artistic possibilities of this material as a decorative feature of this hotel are shown. Similar evidences of this tendency are to be found in the leading hotels throughout the country.

But what has terra cotta to commend itself in such a permanent building as a hotel? The question is not as difficult to answer as might appear. Hotels to be popular, must be up-to-date. Modernity is the life of a hotel. An old-fashioned hotel soon loses its prestige among the element in our civic life commonly known as "The Spenders." Georgian architecture may be popular today and tomorrow Elizabethian or Colonial styles may be the rage. A hotel operating company would not find it provident to remove a $4,000 to $40,000 stone fountain or a grand stone stairway to keep their hotel up-to-date, whereas they would not hesitate to spend $500 or even a thousand dollars to replace a terra cotta piece that had passed beyond its architectural limit of three score years and ten.

The same reason holds true all down the line of structural interior decoration. No home owner can tell what conditions will arise to make his house deteriorate in value or what may ensue to cause him to dispose of his holdings. A wrecker places little value on costly stone art work in a building, because the mere dismantling of it renders it comparatively valueless and what may appear artistic to the original builder, will appeal to the subsequent purchaser as whimsical and inappropriate.

But where architectural terra cotta is employed, its removal is a simple matter and the loss in money invested in it is negligible. It is fully as permanent as the stone, and it is subject to change without a disturbing tug at the original or subsequent owner's pursestrings.

The utility of terra cotta, as a basic building material, has long been realized, and, thanks to the wide publicity which is being given to it today, it is gaining in popularity daily. But as a facade material, its principal claim to present-day popularity is primarily due.

It has lightness and strength, besides having the durability of stone, it has more permanency of color, is the most fireproof material known and above all, is inexpensive. All these factors have combined to give it the same relative position in making the skyscraper possible, that has been accorded to the elevator, for without this light, permanent, fireproof and strong building material, the cost of a towering building built of stone or marble would be almost prohibitive and the extra cost in heavier steel skeletons would bar all buildings over eight stories high.

Some of the terra cotta companies have been experimenting with various clays with the idea of even extending the utility of this material as a decorative medium. Ceramists have been devoting much time of late, in an effort to produce a hybrid clay that will eliminate, as far as possible, practically the last difficulty in manufacturing art terra cotta faience and art ware; namely, excessive shrinkage. The results of these experiments are, of course, shrouded in secrecy.

It has been proved according to one authority that plasticity of clay combined with a dense body, burned at a low temperature that will produce a deep red, gives the best results. About 33.7 per cent of water is used in working it up. With this clay incipient vitrification occurs at .03 with 12 per cent shrinkage and complete vitrification at 4. Viscosity is placed at 6. Soluble salts contained in such clay should not exceed 25 per cent and, after burning, a tensile strength can be figured on of from 75 to 90 pounds a square inch.

By way of a general description of this clay, it might be termed sandy, somewhat ferruginous and cakes rapidly in water. To prevent excessive shrinkage, sand or ground brick is used in varying quantities, depending upon the type of product that is to be made.

But this analysis, as has been intimated, is not by any means universal. Clay compositions vary, no two companies using the same formula. The glaze or slip is also a close secret with every architectural terra cotta manufacturer as is the method of obtaining different polychrome effects.

Suffice it to say that architectural and art terra cotta manufacture has been brought within the last five years to a high state of perfection in this country, and the product equals that turned out by ancient manufacturers in the old world, and, besides, the cost of production has been much reduced, thanks to the training given to ceramists in our native ceramic schools, so that today, terra cotta is the most economic building material that can be used in building construction or decorative structural work.

The Selling End.

But has the sales department's work reached its highest state? Have the advantages of terra cotta, as a structural decorative material been made as apparent to the home owner or the architect, as they might be? Cement is a competitor, but it never can be made proof against crazing or checking as architectural terra cotta can. Is there not room for a country-wide campaign whereby the merits of terra cotta can be fully and convincingly laid before owners of buildings? It has been attempted, by associations and co-operation in some centers, notably, in the East, but it has not been developed to the high degree of thoroughness that is possible. Architectural and art terra cotta have a place in the construction of the suburban home and in the city dwelling, but do the consumers know it?

PIECE WORK SYSTEM REDUCES EXPENSES

Objectionable Features Overbalanced by Benefits Derived—Efficiency Developed —Labor Troubles Minimized—Rigid Inspection Necessary.

By G. D. CRAIN, Jr.

IT is a well established fact in the industrial world today that a laborer who is worth his hire will make more money if paid by the piece. Relieved of the thraldom of a limited wage, he is made to feel that in working to the limit of his capacity for his employer he is also benefiting himself. The restrictions of a daily wage scale, implying that the man subject to it may earn so much and no more, tends to put a damper on the ambitious worker. Likewise, many a man who is rated below par at his trade, is energized through being put to work on the piece work basis. These facts have been worked out in many lines of manufacture, and there sems to be no good reason why they should not be applicable to the brick industry.

Piece-work is a proposition well worth the time and attention of any clayworker. It is notable that many illustrations of its benefits may be found among the progressive members of the trade. In a number of respects, this method of handling labor is proving to be the missing link necessary to successful yard operation and sure profits in an era when brick as a building material is subject to strongly competitive influences and when its success means the survival of the fittest.

A retrospect of conditions in the brick trade during the past few years suggests that one of the prime difficulties has been the realization of profit upon the extensive investment in the plant equipment and pay-roll. It must be confessed that manufacturers have been deceived in their policies of management by the bountiful supply of raw material provided by old Mother Nature. In not more than one out of twenty-five cases, where the manufacturer feels that his plant is not the money-maker that it should be considering the extensive captial represented, is the fault with the clay deposits or the plant equipment. More frequently the loss accrues from the disbursement of funds to employes who may or may not exert themselves in reaching a maximum of efficiency for their employer.

It must be remembered that while the raw materials of the industry may be supplied by nature, its revenue comes from the public. The collections of the plant must be husbanded according to the demands of modern business economy if satisfactory dividends are to be forthcoming, but it is in economics of labor expenditures that the trade is now educating itself most broadly and with the greatest benefit.

A Comparison of Methods.

Compare the stories of two concerns which are well known in the Middle West. One of them is a veteran in the field, while the other is a comparative new-comer. Even a greater difference than that exists. One of them, capitalized at $350,000 and backed by fifteen years of good business, has been forced gradually down to a point where its stockholders have given up the ghost. It has sold most of its property and has quit the business. The new company is capitalized at $75,000 and, although the infant of its class, has completed deliveries upon the biggest single brick job ever handled in its community. The old company, erstwhile a prominent figure in the trade, paid its yard forces by the day. The new one pays its men according to the number of brick pressed and burned each day.

It would be manifestly unfair to assert that the downfall of the old company was entirely traceable to its system of handling the pay-roll. There are too many brick yards prospering today under the old-fashioned wage scale to admit of its being cast off as utterly useless. Local conditions play the most prominent part in every success or failure. But, at that, there are some interesting facts to be obtained from the veteran concern's experience, which may be regarded as fairly typical.

The old brick company operated three separate plants, all of them big ones. Their capacities ranged from 15,000 to 20,000 brick per day in the smallest, to 50,000 to 60,000 brick per day in the largest. All were supplied with individual shale pits. Every man on the company's pay-roll worked at a daily wage, with the exception of the office force. From $1.00 per day for young drivers, the scale ran to $3.50 per day for stationary engineers. By far the greatest expenditure was for machine men, off-bearers and setters at $1.50 and $1.75 per day.

Looking over the yard sheets of the old company, it may readily be seen that it was subjected to constant expenditure, week in and week out, while the production varied phenomenally. In properties of such extent it was natural that break-downs and delays of all sorts should occur. There was no safety-valve to relieve the surplus pressure exerted by the pay-roll at such intervals.

An average week with Yard No. 1 might show the following record of production: Monday, 42,000; Tuesday, 45,000; Wednesday, 25,000; Thursday, 40,000; Friday, 38,000; Saturday, 15,000. The same ratio prevailed at the other plants. When the yard ran evenly on full capacity, or to the limit of its capacity, the outlay for wages was met with a maximum of efficiency from the employes and machines. When the daily output slumped, for any reason, the money-making momentum of the company lost force. It cost just as much, in a general sense, to make 25,000 brick on Wednesday, when the hopper was clogged and had to be scraped, as it did to produce 40,000 on Thursday, when everything was in fine working order.

The weak point is apparent. The fixed wage scale ate up profits when the output ran below normal in the least, and it gave the plant owner just an even break when full-time operations resumed. Of course, to this vulnerable point alone the withdrawal of the big, established concern can not be attributed. Many of the stockholders desired to withdraw their investments in favor of openings promising quicker returns. Men at the head of the enterprise were considering retirement from business life after years of active service. But the fallibility of the rigid wage scale remains as one evidence that the properties were mismanaged. And as has been aptly said, a chain is no stronger than its weakest link.

Piece Work Develops Efficiency.

The story of the new company, which is representative of the progress in the industry, is an entirely different one. To be sure, there is only one yard of about 30,000 daily capacity—barely one-third the daily production of the old concern. But the last ounce of efficiency is being developed by this plant.

The pay-roll is made up on the basis of 7 cents per man per thousand brick. There is a separate account, of course, for the engineer and one or two skilled mechanics whose ability and terms of employment demand daily wages. But for the rank and file of yard help, some sixty-five or seventy employes, the regular piece-work rate of payment is in force.

Output Determines Outlay.

The hub of the wheel is at the machine in the plant. The work of the press determines the outlay for the day's labor. As a result, these brick manufacturers pay only for the firmly-molded unburned brick which are shoved across the shining steel apron at the crunching jaw of the press. There is little waste and practically no expenditure for time spent by the workmen in "taking things easy" or in "slowing up the run" when worried by rain, hail or snow.

The capacity of the machine is 30,000 brick per day, although it can be run to 35,000 under exceptionally favorable conditions. The basic rate upon which the manufacturers figure is 25,000 brick per day, or $1.75 for the unskilled labor of the yard. In taking a minimum instead of a maximum output as the basis for wages, the manufacturers protect themselves admirably. When the day's run goes above 25,000, the extra compensation is allowed without a murmur, for the plant owners are sure they are paying for value received.

The drier at the plant accommodates just one day's output. Today's brick dry within twenty-four hours, and the cars are moved out of the steaming dry shed each morning as new ones are added, so that the chain of production is unbroken. The burns are fired, of course, as one kiln after another is filled, ready for the final operation. In completing the last step it is a question of having enough kiln-room without hampering the progress of the two preceding processes.

No Classification of Labor Necessary.

The experience of the Middle Western brick company, which has made a success, is that unskilled labor demands no classification. Whether a man works in the clay pit or at the machine, his wages may remain the same. In view of the fact that a goodly percentage of labor in this particular district is colored, the lines of demarcation in the work of the clayworker are made still fainter.

Consequently, the clay-loading gang is paid according to the number of brick turned out by the machine each day. The machine gang naturally gauges its recompense accordingly. From the machine it is only a step to the drier men and the setters, and their wages are also governed according to the number of thousands of brick issuing from the press. Inasmuch as this is at least 25,000, or $1.75 per day on the basis of 7 cents per thousand, and oftentimes more, the company does not experience the least trouble with its yard help.

The experience of most piece-work employers has been that the men work early and late to swell the envelope at the end of the week, and the dropping of tools when the whistle blows, is a neglected practice. The employes scorn petty subterfuges to gain time even during the warmest sort of weather. Indeed, it has been proved that the force works to as good advantage during midsummer as in the cooler days of spring and fall.

Capacity Limit Production.

There is a feature of capacity limit production at the plant which pays its helpers according to the amount of work accomplished. For example, the drier is filled for the day by 3 o'clock in the afternoon, during pleasant weather, eight months out of the year. The men arrive early and run out 30,000 from the machine by the middle of the afternoon, hastening quitting time by a matter of two or three hours. Any members of the yard gangs who wish to knock off when the machine run is completed may do so, satisfied that they have made from $1.75 to $2.10. The remainder of the afternoon is occupied in deliveries, tidying up the yard and machines for the next day, and delving into new shale deposits. The advantages of this are obvious. The day's work is capably handled while there is yet plenty of time for the multifarious odd jobs necessary in operating a big plant. During excessively warm weather, when hard labor is oppressive and sometimes dangerous in the heat of the sun, the men often work slower, so that it is 5:00 or 5:30 o'clock when the drier is full.

The delivery department of a yard which runs on the piece-work basis must necessarily be separate and distinct. The wages of drivers cannot be scaled according to the machine-run, for the out-bound loads are taken from the kilns and do not hinge upon the amount of work done at the press. So in the stable alone are wages based on day work. It is up to the stable boss and the shipping clerk to see that their men are on the job every minute of the working day. It is comparatively easy to operate this department at a maximum of efficiency.

There is no reason why the manufacturing departments of a brick yard should not be subject to piece-work wage scales, applied to the operations of individuals. The only objection which could be raised would be that the quality of the product might be impaired through the over-zealous endeavor of the clay-loading and machine gangs to get out as much as possible during the day, thereby increasing their individual stipends.

But there are two safeguards against this contingency. The machine cannot be worked any faster than the capacity of facilities provided for succeeding processes of manufacture will allow. There must be adequate inspection of the finished material and every care should be taken to enforce the realization on the part of the laborers that it is quality as well as quantity that counts in making a brickyard successful.

Output Must Bear Inspection.

The first safeguard is reasonably effective. Take the case of the yard equipped with a drier of 40,000 capacity. In most cases such a plant would possess adequate mechanical equipment for this output without crowding or over-speeding, which there would be no temptation to indulge in by reason of the drier's limited capacity. Lamination, the greatest foe of the brick manufacturer, is not often due to over-haste at the machine, but is more often attributable to defects in the knives. So a yard rated at 40,000 brick per day may take care of its output in a satisfactory fashion on the piece-work basis even without the precaution of having an inspector.

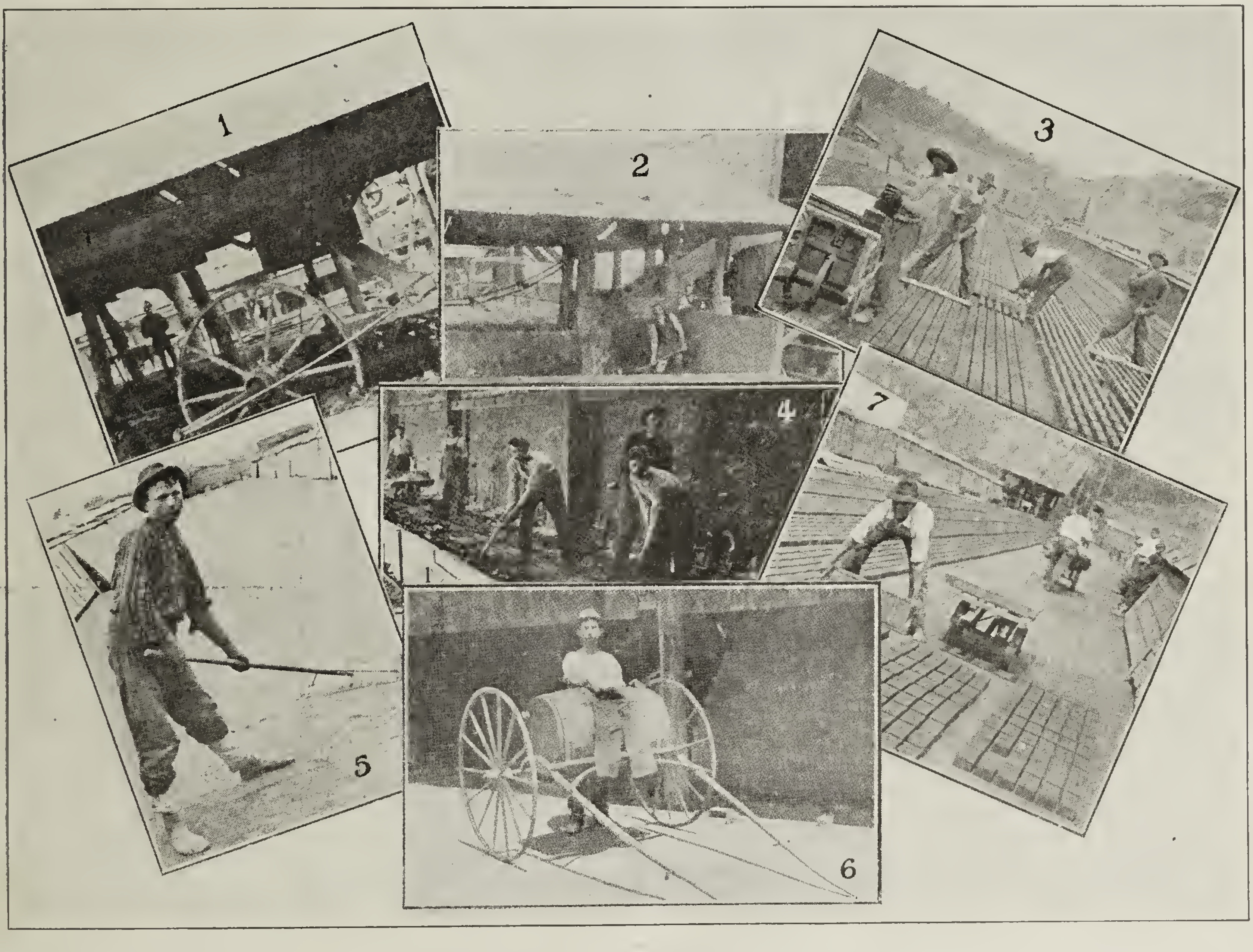
Inspection, however, costs little and does wonders. It is the final step in operating a yard successfully at an expenditure which covers only the brick made and burned. In the Middle Western plant where 7 cents per thousand is the rate of wage, there are two inspectors. To one of these is intrusted the responsibility of seeing that all brick, up to the time of burning, are acceptable. The other man supervises the methods of burning, the fuel used and all other details making for an acceptable kiln of red brick. In a sense, these two men are simply joint superintendents of the yard.

Under Experienced Supervisors.

The man whose duty it is to inspect the unburned product watches the clay-pit, the machine and the drier. When the cars are safely out of the drier into the kiln, his watch over their contents is finished. Thus, from the time that the mud is quarried until the brick are set ready to be fired, they are under an experienced eye ready to detect defects of any sort. It is the experience at this yard that the gangs do not require "jacking up" twice a year because of errors due to careless haste.

The "superintendent of burns" is in charge of work which is rarely affected by hurried operations. When a kiln is fired it must be kept burning for a certain length of time and there is no other alternative. When the roof has been pulled off and the contents are cool, this inspector clambers over the courses and chalks the perfect sections, the culls and so on down to the "eye brick," which may be available as "black headers."

The entire success of an inspection system depends upon its thoroughness. The inspector is a yard-boss, superintending the every-day operations of manufacture, rather than a critic. The only reason for his existence is that the plant-owner may take no chances in his effort to increase the efficiency of his property through the adoption of the piece-work system of pay for labor. A poor grade of brick is costly at any price, but it is not with this phase of the problem that this article has to deal. The great problem is to balance the pay-roll with the finished product so that the latter shows no exorbitant costs at the expense of the former.



1. "Tempering" soft mud in a circular pit. 2. Sod pit. Chain elevator carrying mixture to machine. 3. "Spatting" brick "flat" and on "edge;" "Edging;" Loading from "Hack" onto barrow. 4. Burning a "green" brick kiln with coal. 5. Boy "Luting" the surface of an open yard. 6. A typical brickyard water cart. 7. Trucking and dumping; "Green" brick drying on open yard. Strange to say, all the above interesting operations may be paid for by the "piece-work" system.

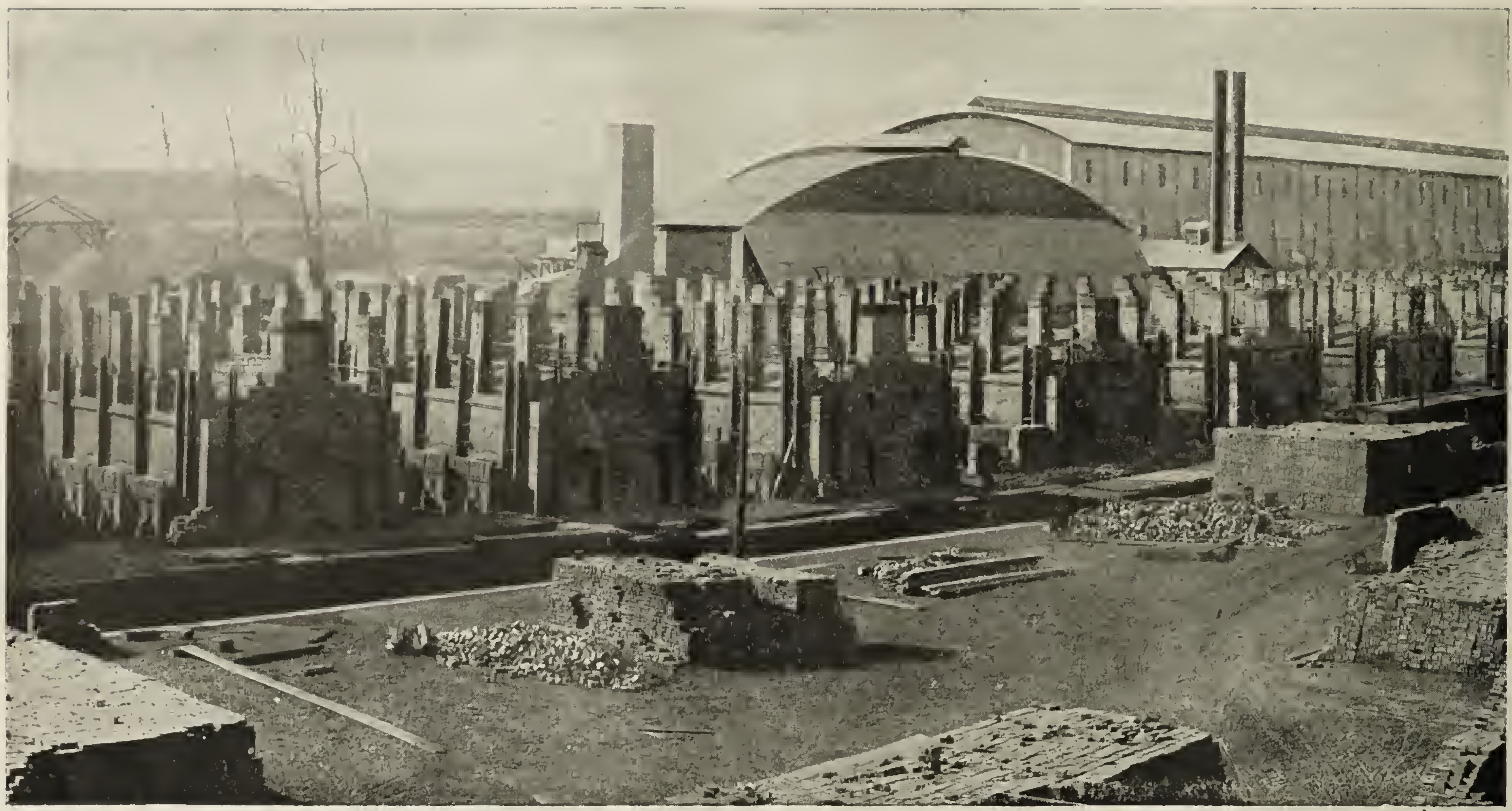
TERRA COTTA WORKS DESTROYED BY FIRE.

Mysterious Fire Razes Works of the Swift Terra Cotta, Brick and Tile Co., Ottawa, Ill.

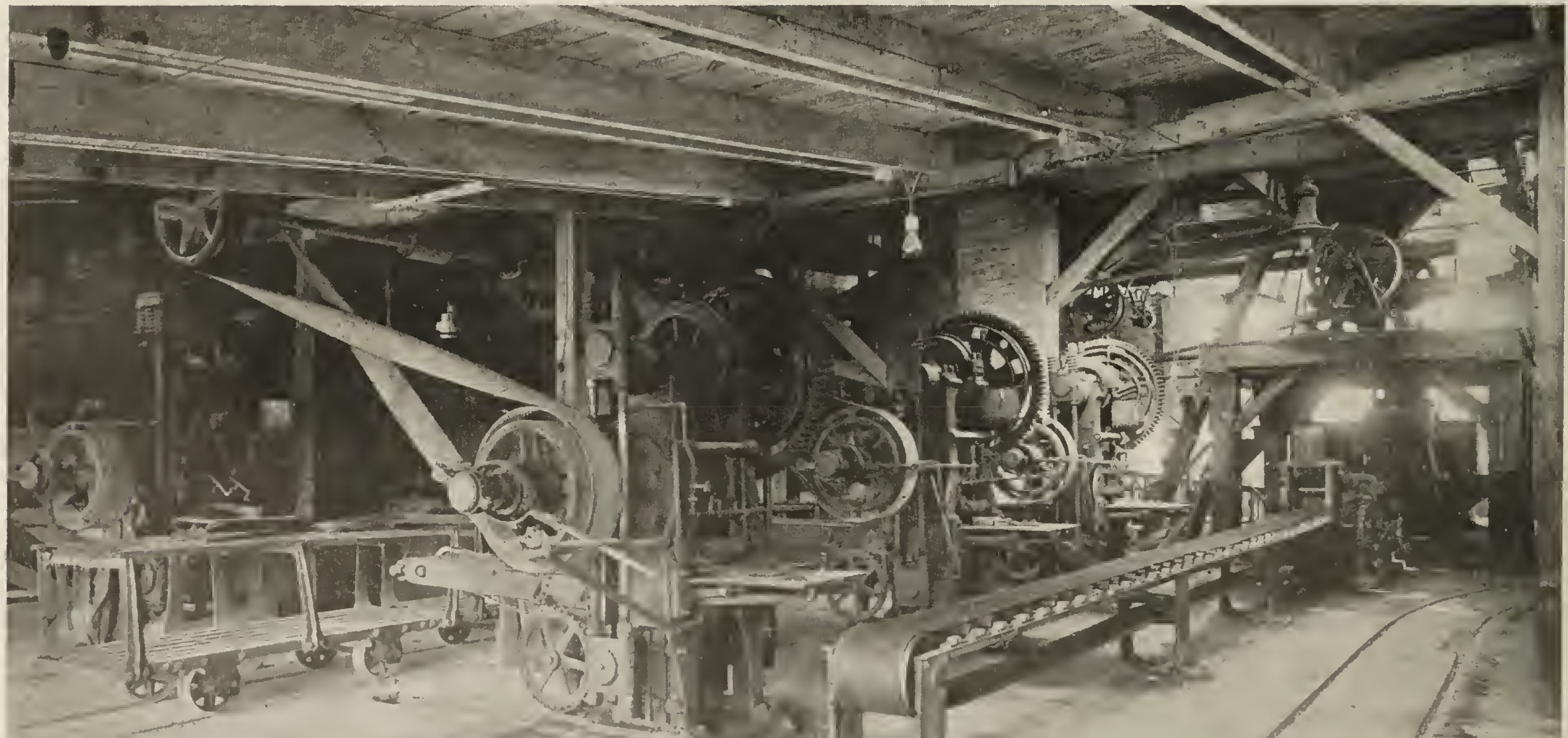
The plant of the Swift Terra Cotta, Brick & Tile Co., at Ottawa, Ill., was totally destroyed by fire on Sept. 16th. The fire department at Ottawa was unable to be of assistance, owing to the great distance from the water supply, and the plant was permitted to burn uninterrupted, viewed by hundreds of people who went out to the scene in autos and carriages. The loss will aggregate $25,000, only $5,000 of which was covered by insurance, and while the blow is a heavy one to the owners, steps have already been taken to rebuild the plant, and it is probable that in a few months a new factory will occupy the site and the business will be renewed on even a larger scale than before.

The lessees of the plant, Felix Guignon and Frank Graham, took possession Sept. 1st, leasing the plant from the Swift Terra Cotta, Brick & Tile Co. The loss comes to these gentlemen at a very inopportune time and their friends hope that they will recover from its effects and take charge of the rebuilt plant. The plant had been leased for a term of three years with an option to buy, and as Mr. Guignon is an experienced clay man, there was every reason to believe that the concern would make a success. Several contracts had already been closed up and some of the ware had been made up ready for burning but was destroyed by the fire.

THIS IS WHERE THE BESSEMER BLOCK ARE MADE



A Portion of the Immense Paving Brick Plant No. 1 of the Bessemer Limestone Co., Bessemer, Pa. Rectangular Down Draft Kilns are Used Successfully, About 2,000 Pounds of Slack Coal Being Required to Burn a Thousand Ten-Pound Blocks.



Brick Machines and Represses at Plant No. 1 of the Bessemer Limestone Co., Bessemer, Pa. The Brick Are Taken From Dryer Cars, of Which the Company has More Than a Thousand, and Pushed Into the Immense Rodgers Waste Heat Dryer.

SIXTY MILLION PAVING BLOCK A YEAR

Making of Vitrified Block Compared to Bread Making—Famous Bessemer Block Manufactured Under Most Favorable Conditions

"THE best is the cheapest." This axiom applies with greater force to paving brick than to any other commodity entering into the construction of public improvements and, therefore, is of direct personal interest to every taxpayer and street user. To engineers and governing officials charged with responsibility for results obtained in public work the quality question, as applied to paving brick, is one involving life-long interest and professional pride.

Dry Pans Fed by Conveyor Belts at Plant No. 2.

The major portion of all the paving brick produced is manufactured from shale, because from this natural material the toughest and, therefore, the most durable paving brick are made. Primarily upon the toughness of a paving brick depends its durability or life in the pavement.

In varying degrees of quality, shale has been discovered in different sections of the country. Where the best quality of shale is found, as might be supposed, the largest producing centers of paving brick are located, and, considering the importance and scope of the industry, these centers are comparatively few. Of all the shales discovered, none excel in quality the Bessemer.

The manufacturers of Bessemer paving block produce upward of 60,000,000 ten-pound pavers per annum. This enormous capacity gives them rank among those in the forefront of the industry, and makes Bessemer, Pa., one of the chief centers of the paving-brick business. Modern in every particular, the plants are models of their kind, and the methods of manufacture are acknowledged to be equal to any which the industry affords. To engineering and constructive genius is added the industrial courage involved in the great outlay of capital, to provide plants which mark a new era in the business, producing paving brick, uniform in their durable qualities and, therefore, guaranteeing the most satisfactory and longest service in the street.

The history of the company covers a period of more than a quarter of a century. Originally founded as extensive quarriers of limestone, the corporate title has never been altered to directly indicate the large volume of vitrified paving brick placed annually upon the market, in addition to the daily capacity of 4,000 tons of crushed limestone. Always under the one conservative management, the development of the interests involved has made the name of the corporation one of value, and given it standing in financial and industrial circles.

Likened to Bread Making.

In order to adequately present the progress as marked by Bessemer block in the paving-brick industry we take pleasure in quoting generously from an interesting booklet which the company issues:

"The making of vitrified paving brick is a mixing and baking operation bearing marked similarity to the baker, his dough, and his loaf of bread. In both instances it is a mixing, kneading, shaping, and baking operation. You cannot judge a loaf of bread by its looks, nor tell how good it will taste until you test it by taking a bite. You cannot tell how tough a paving brick is by looking at it, and it is upon the toughness of a paving brick that its durability depends. Paving brick may be identical in physical appearance and still vary in toughness to such a degree that some will be absolutely unfit for service in the street. With paving brick, as with bread, the best effort is futile if the finished product is based upon the use of poor raw material.

Paving Block Entering Dryer at Plant No. 2.

Standard Tests Used.

"A standard method of measuring the toughness of all paving brick has been adopted by the National Brick Mfgrs' Association and The American Society of Municipal Improvements. The former is the official organization of the brickmakers of the country, and the latter a national organization of public works officials. This test is commonly called the 'Standard Rattler Test.' Cities specifying this test and making every carload of paving brick subject to its provisions will be found to have the best brick streets.

"Human nature is much the same with paving-brick manufacturers as with other folk, and it is only human nature for any paving-brick manufacturer to submit samples for inspection and test which are the very cream of his product. Practical experience has taught that testing samples alone tells only the story of the samples. Testing every carload tells the story of the pavement that will be made from it. The shipments, not the samples, are used in the street.

"No paving brick manufacturer is able to make all his paving brick alike. Therefore, the product from different periods of production may differ materially in that prime factor described as toughness, which is known to determine the durability of a paving brick. By toughness is meant that characteristic which enables a paving brick to successively resist the forces of shock and abrasion to which it is subjected in service. If neither the manufacturer nor the consumer puts the material to the standard method of test, how can any definite degree of quality be determined?

"Nearly all manufacturers make some low-grade, as well as high-grade, paving brick. With different factories the percentages of good and poor brick differ. The cities which test every carload with the Standard Rattler get the good brick, and those which do not make this test are apt to get the poorer grades.

"To install a Standard Rattler the total initial expense is seldom in excess of $300, and often less. A rattler should last from eight to ten years, or longer. A day laborer can make the test. When this small financial outlay is compared with the money expended on even a small paving job, the virtue and value of the Standard Rattler Test is immediately appreciated.

"Progressive engineers in charge of brick paving are agreed there is just one way to insure a durable and satisfactory brick-paved street or road, and that is to test every carload, or, at least, every other carload of paving brick shipped.

"The foregoing common-sense business propositions have appealed to many municipalities, and the demand is daily increasing for a paving brick of a uniformly tough and durable character. The demand is for a high-grade paving brick that will be the same today, tomorrow and every day. Practical men are fully aware of the fact that it costs just as much money to pave a street with poor brick as it costs to pave a street with the best paving brick. A difference of a few cents per square yard in the price of the paving brick may, in a few years, mean the difference between a good brick street and a failure. The element of hazard and gamble is eliminated when the Standard Rattler Test is applied to every carload of paving brick shipped. Uniformity is the watchword in paving-brick production and uniformity is the basis of the Bessemer method of manufacture. The name "Bessemer" means something in paving brick as well as in steel."

The Bessemer Plants.

Some idea of the magnitude of the Bessemer paving brick industry may be imagined when it is known that upwards of 600 men are employed at the two immense plants at Bessemer, Pa. They are situated some little distance apart, the shale pit between supplying both plants. The hard blue shale used in the manufacture of the paving brick is procured by means of a Marion steam shovel, and the two shale sheds, 300 ft. long, afford excellent opportunity for the uniform mixing of the raw material in its native state. The gigantic continuous Haigh kiln at plant No. 2 is one of the largest in existence and furnishes a uniform method of burning. At plant No. 1, a dozen down-draft kilns take care of the output. It has been found that the burning at this plant requires about 2,000 lbs. of slack coal for each thousand ten-pound blocks.

Large Shale Shed at Plant No. 1.

Showing Fire Boxes in Kilns at Plant No. 1.

The buildings of the two plants are extensive, being largely of brick construction. Throughout the plants Bonnot machinery is used extensively, the shale being ground in Bonnot dry pans and then passed through a piano wire screen made by the same company. The stiff mud process is used, Bonnot auger machines being used with automatic side-cut tables and the necessary off bearing belts.

The waste heat drying system in use was installed by the well known L. E. Rodgers Engineering Co., and has proven very satisfactory and successful. In all, over one thousand dryer cars are used at the two plants. They are the product of the Ohio Ceramic Engineering Co., as are also the single and double-deck transfer cars and the electric transfer.

Modern Method of Handling Coal at Plant No. 2.

Gravity Method of Loading Brick from Kiln to Car at Plant No. 1.

The power equipment of the two plants is of the highest character, that at plant No. 1 consisting of a 250-h. p. Buckeye engine and a horizontal tubular Erie boiler. At plant No. 2, the power is supplied by a 500-h. p. corliss Allis-Chalmers engine and a Sterling water tube boiler.

While the larger part of the product is paving block, building brick are also produced. The company owns 800 acres of valuable land on which are found extensive deposits of shale, underlaid by limestone which is crushed and shipped, the average daily output being about 4,000 tons.

The immense business which the Bessemer Company has built up is a monument to the progressive work of its officers, who are as follows: John Todd, president; C. C. Blair, secretary and general manager; John R. Rowland, treasurer, and F. R. Kauengesir, superintendent. The headquarters of the company is at Youngstown, O.

The Bessemer Limestone Co., recognizing the merits of the Dunn Wire-Cut-Lug process, recently secured a license to use the Dunn method, which does away with the work of repressing the block. The Bessemer company and the Metropolitan Paving Brick Co., of Canton, O., also a recent licensee, are strong additions to the Dunn forces, which include companies operating twenty-four of the largest paving brick plants in the country.

BRICK FROM GREAT CHINA WALL.

Burned Clay, Unharmed by Centuries of Exposure to the Elements.

Displayed with as much honor as a bejeweled crown of an emperor, there is in the private office of Ambrose Swasey, of the Warner & Swasey Co., Cleveland, O., a burned clay brick, an account of which appeared in the Cleveland Leader, as follows:

"It rests in a glass case and is one of the most valued relics of Mr. Swasey, designer of the world's greatest telescope and a scientist of wide reputation.

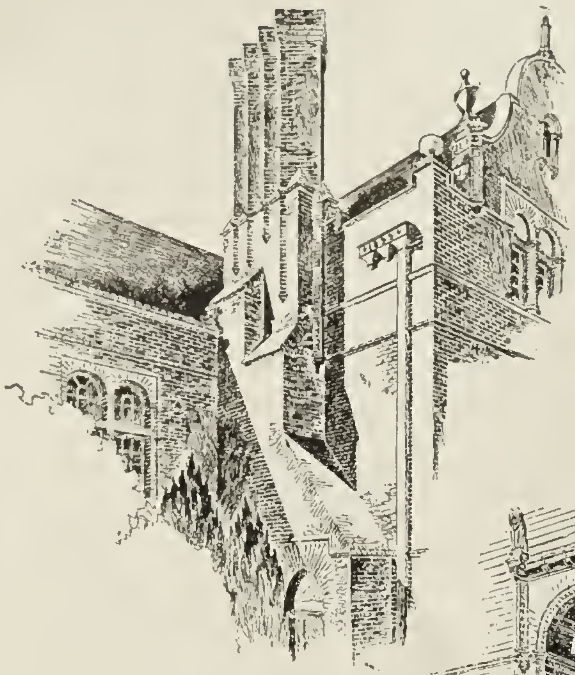
"This brick was a unit in that wonderful engineering achievement, the great wall of China, made 1,300 years ago, and unharmed by the centuries of exposure to the elements. It was made by the same process as that in use today, although the method must have been crude. The success of the process of burning clay, as proven by this brick, was not new when the great wall of China was built, but had come down through some thirty centuries preceding that period and there are in existence much older examples of the art than the one so proudly exhibited by Mr. Swasey. But this is a case near at hand upon which local brickmakers and salesmen pin their faith in the product.

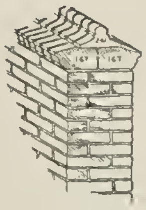
Weighs Thirty Pounds.

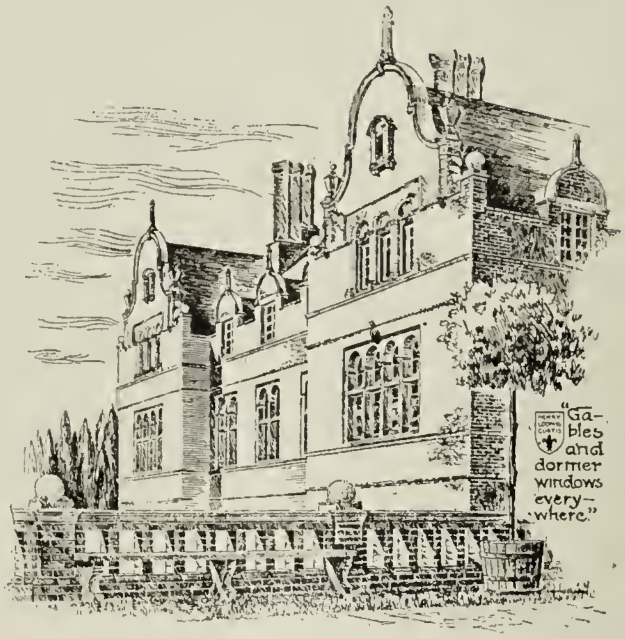
"The brick was brought from China by Mr. Swasey, but not without great difficulty. It weighs thirty pounds and is eight times the size of the common brick of today. It measures fifteen by eight by four inches. It was not easy to get possession of the brick in the first place, and even more of a task to get it home. It was first carried on the back of coolies through the mountainous country to the water, then shipped by rail and boat to the coast and across the Pacific Ocean and again by rail across the continent to Cleveland.

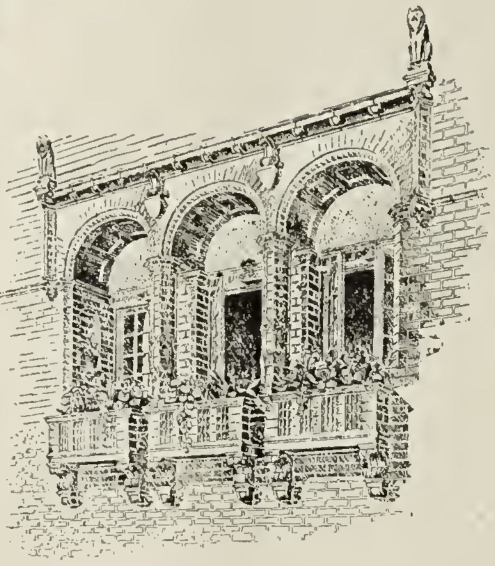
"No other material has stood the test of time as brick has. As far back as there is a record of people and events there is history of the use of burned clay. The process is older than its known history, and there stand in many countries today examples of brick work that have been an

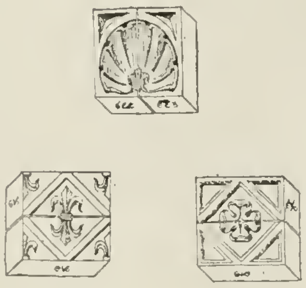
"THE STORY OF THE HOUSE"

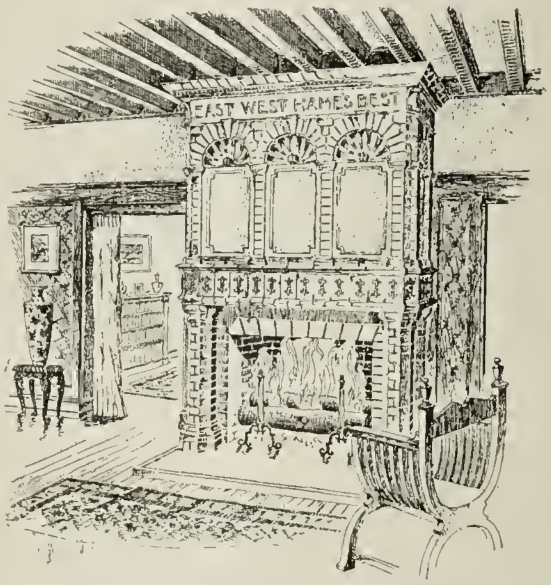


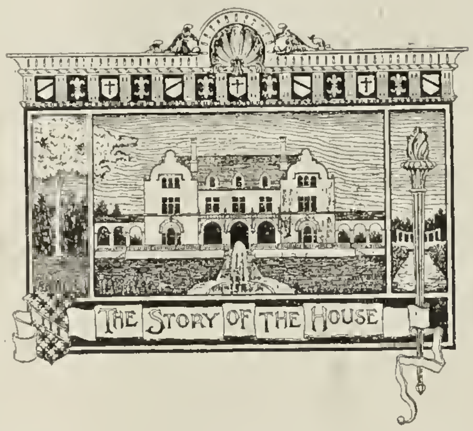


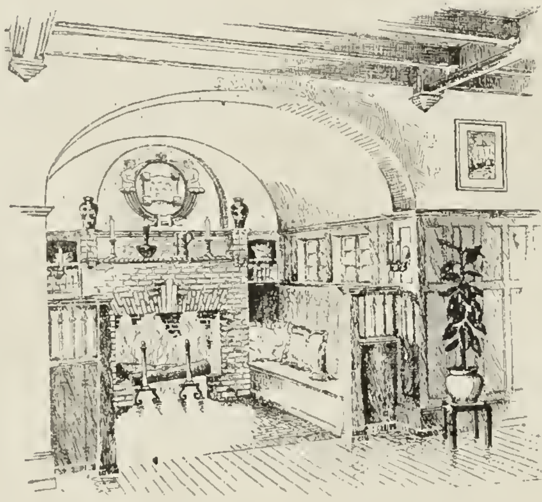

"Gables and dormer windows everywhere."

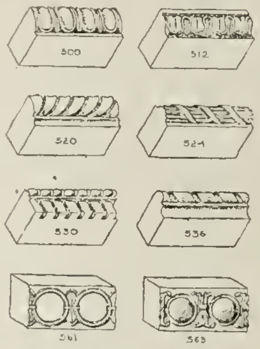


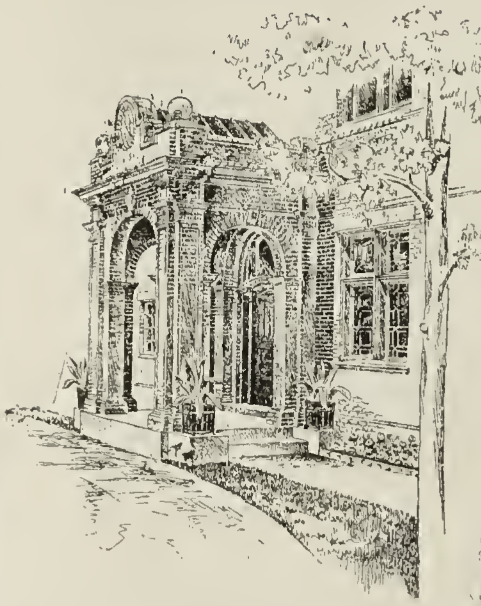


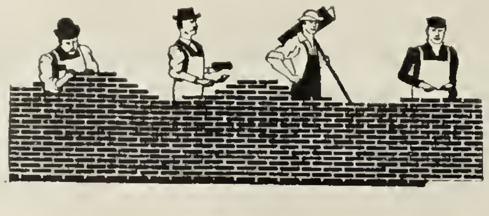



THE STORY OF THE HOUSE









important element in preserving the history of the period in which they were made. History owes much to brick, the historians say.

Untouched by Age.

"This brick from the great wall of China shows no sign of disintegration nor the effects of heat or storms. It is interesting to compare this 1,300-year-old brick with those of modern type and note the improvement in texture. Utility alone was considered in brick making until recently. Without loss of the quality or durability the brickmakers are adapting their product to artistic use.

"In considering the brick from the wall of China it is interesting, too, for the home builder of today to contemplate that the brick he puts into the wall of his house may be in existence 1,300 years hence."

CLAY PRODUCT PLANT BURNS, LOSS $100,000.

Fire Starts in Dry Room, Eats Way Through Entire Plant of the Clay Product Co., Brazil, Ind.

The immense plant of the Clay Products Co., three miles southeast of Brazil, which was a short while ago a scene of industry and great activity, was almost completely destroyed by fire Saturday, Sept. 21st. The fire originated in the drying room at the east end of the main building and ate its way to every part of the gigantic brick and frame building, notwithstanding the efforts of scores of workmen. The main building was totally destroyed as were also the machine, pattern shops and engine room, the kilns, the office and some small sheds being all that is left of the plant. About 200 men were thrown out of employment and the business of the company has come to a standstill. The loss is estimated at more than $100,000. The insurance, however, almost entirely covers the loss.

The Extensive Works of the Clay Product Co., Brazil, Ind., Recently Destroyed by Fire.

The plant was owned by a stock company of which H. H. Titsworth of Chicago, is president and general manager and Chas. Shannon of Brazil, local manager. The company maintains headquarters in the Stock Exchange building, Chicago. Under the present management an extensive business in clay conduit has been built up and only recently the plant had been equipped for the manufacture of Denison hollow tile.

The fire burned throughout the night and the rain which fell proved to be injurious rather than helpful as it cooled the iron machinery rapidly, causing it to crack. A train load of clay products, on a switch, was threatened with destruction but a special engine was sent to the plant and the train was pulled out of danger.

The company operates a large shale and coal pit at Hoozierville, some distance south of the plant, and as several other factories are furnished with clay by the Clay Products Company, the pit will not be entirely closed down.

F. W. Darling, vice-president of the company, when interviewed at the Chicago office, stated that while definite plans could not be announced until the insurance was adjusted, in all probability the plant would be rebuilt.

The F. H. Goss Brick Co., Tacoma, Wash., was the successful bidder on the new central school and administration building to be erected at Tacoma.

"THE STORY OF THE HOUSE."

Attractions of the "House of Brick" Cleverly Set forth in Pen and Ink Sketches.

*"I would have, then, our ordinary dwelling houses built to last, and built to be lovely, as rich and full of pleasantness as may be within and without: * * * with such differences as might suit and express each man's character and occupation, and partly his history.—"Seven Lamps of Architecture."*

—Ruskin.

Some idea as to the artistic results which may be obtained by the use of plain and fancy molded brick, terra cotta and roofing tile may be gained by glancing through "The Story of the House," an attractive book, 8 by 11, bound in stiff boards, issued by the O. W. Ketcham Co., Builders Exchange, Philadelphia.

The book abounds in interesting pen and ink sketches of brick and terra cotta detail, accompanied by appropriate quotations from standard authors and it certainly will prove a source of pleasure as well as a convenient reference as to the various structural forms of clay, not only to architects and members of the building profession, but to the layman, who is interested in home building.

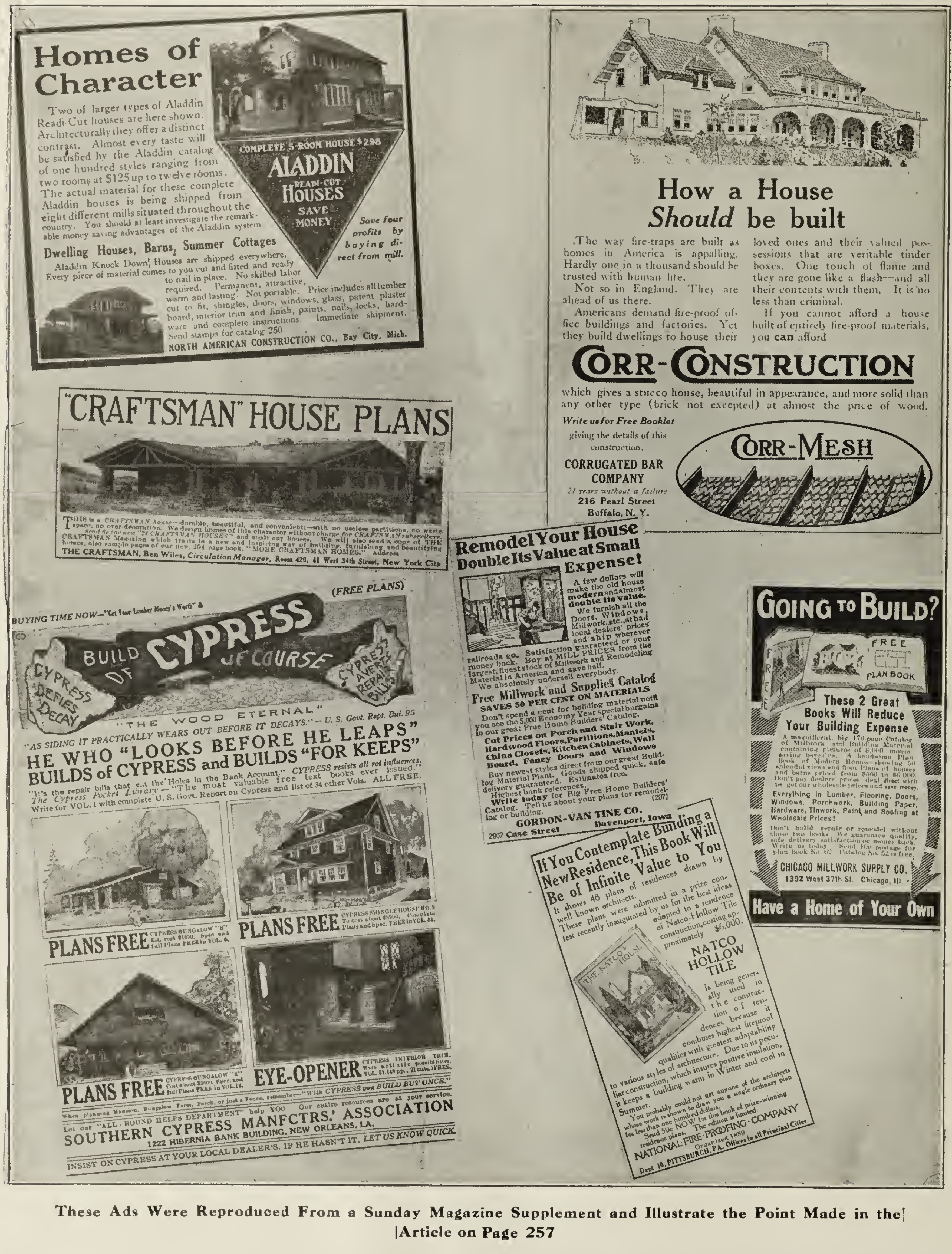
On the title page appears the following selection from the "Song of the Broadaxe" by Walt Whitman:

> "The crowded line of masons with trowels in their right hands, rapidly laying the long side-wall
> The flexible rise and fall of backs, the continual click of the trowels striking the bricks,
> The bricks, one after another, each laid so workmanlike in its place, and set with a knock of the trowel handle."

On the opposite page, are shown some illustrations, chosen at random from the book, which demonstrate that the home, from the entrance gates to the turret, may be of brick, without in any way detracting from the grace and beauty of the whole. The garden gate and sun dial, the hospitable porch, the hall fire place, the inglenook, the library window, my lady's casement, the loggia and terrace, the gables and dormitories, and chimney tops, all combine to radiate a cheery homelike atmosphere.

The second part of the book is given over to a description of a large variety of shapes and ornamental terra cotta, hollow tile fireproofing, terra cotta roofing tile, fancy and molded brick, enamel brick, paving brick, and fire brick, closing with the appropriate quotation: "This vast ball, the Earth, was molded out of clay and baked in fire."

AN OBJECT LESSON IN PUBLICITY TO CREATE DEMAND



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Americans demand fire-proof office buildings and factories. Yet they build dwellings to house their loved ones and their valued possessions that are veritable tinder boxes. One touch of flame and they are gone like a flash—and all their contents with them. It is no less than criminal.

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Have a Home of Your Own

These Ads Were Reproduced From a Sunday Magazine Supplement and Illustrate the Point Made in the Article on Page 257

HOW CLAY MAN MISSES PUBLICITY CHANCE

Common Enemy Takes Advantage of Great Opportunity to Boost Its Building Material Before 2,500,000 Readers

Nothing creates a demand for a manufactured product of recognized worth like publicity. The makers of patent nostrums and proprietary articles have recognized this fact for years and reaped a harvest accordingly. The manufacturer of the commodities of life began to see the dawn of the new light and applied his energies in that direction. Today, every producer of salable products, with the one exception possibly of the clayworker, widens his field with printers' ink.

This article was prepared to show how the clayworker is being left in the march of progress.

THE Sept. 22 issue of the Semi Monthly Magazine Section sent out by an associate list of several of the great metropolitan Sunday papers was devoted to the subject of home building.

The entire section of some twenty or more pages was filled with interesting articles prepared by capable writers who wrote without bias and was illustrated by actual photographs to show the editors' ideas of what the ideal home should look like.

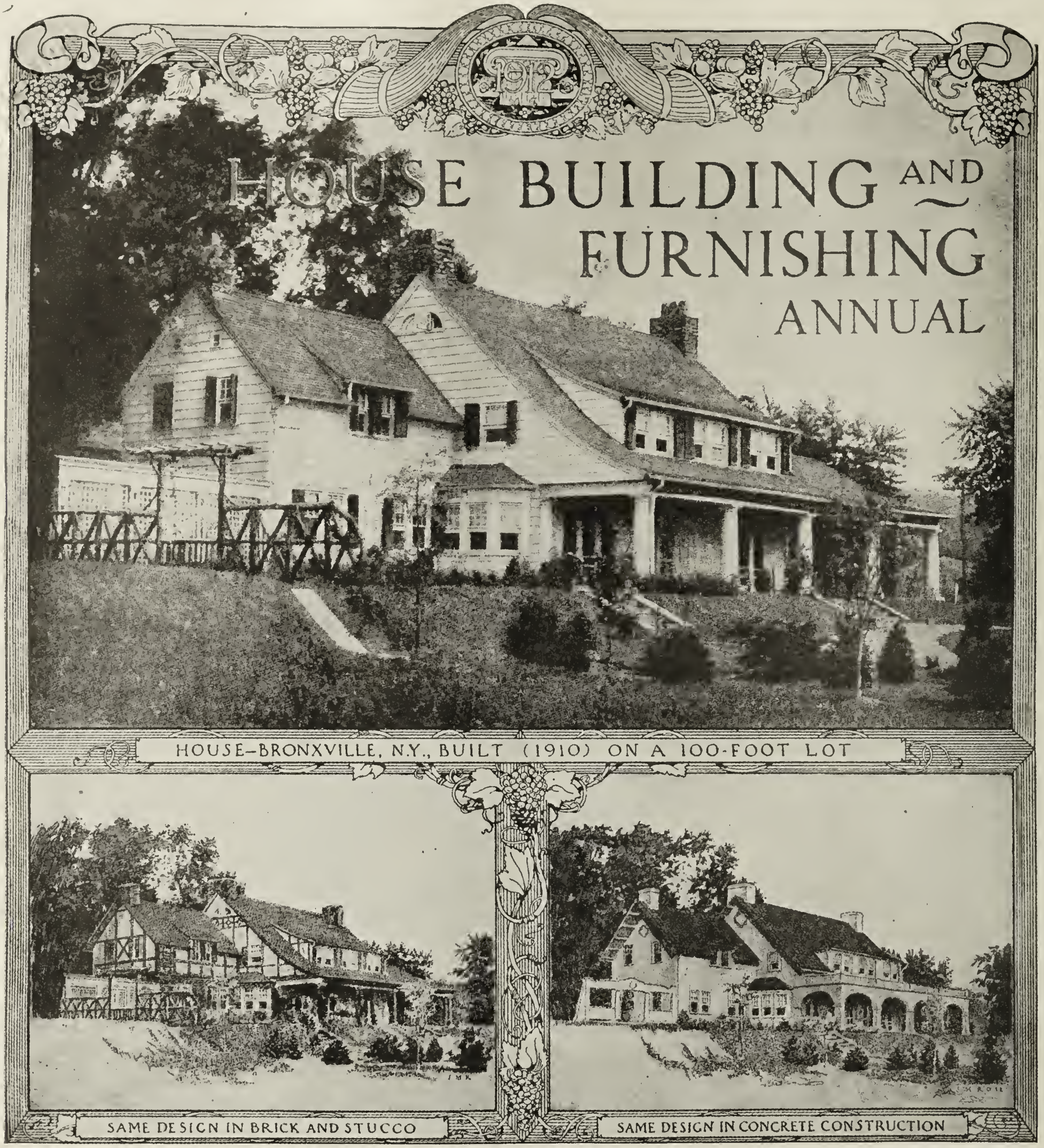
The frontispiece of the magazine illustrated what the writer considered the "ideal" home. This illustration was from actual photographs of a real house. This house was built of lumber, but standing side by side in this picture of the lumber house were two other pictures. These showed the same house as it would appear made from concrete and from brick.

One significant fact that stuck out in the leading article, entitled, "The Ideal House," was that the writer paid a most glowing tribute to brick and clay products, although he gave concrete and lumber full credit for their part in the construction of a home.

Here is the article which is printed in part, certain portions being emphasized by "Brick and Clay Record."

> Of course, this will not be a dogmatic statement as to what constitutes an ideal house. Folly would be writ large on the manuscript of the writer who attempted an experiment so egotistical. That which one person deems ideal, or nearly so, is scoffed at by another; for it is mostly a matter of temperament and training. We know people who insist that nothing is truly ideal unless puritanically severe; while others find their joy in frills and furbelows. The mission sort of man would hate himself in a rococo palace, and a Louis Quatorze dame would look sadly out of place in a craftsman living room.
>
> Yet, there are architectural principles and good taste canons that apply to houses of all styles and rooms of all periods, and to those of no period at all. Likewise, it is possible—easy, indeed—completely to change the appearance of a house or a room by the use of different finishing materials.
>
> ### Calls House an Ideal One.
>
> Turn for a moment to the illustration on the front cover of this magazine. Here is a house with which it would be difficult to quarrel. Architecturally satisfying, home-like to an exceptional degree, amply large for the average family, it is adapted to a country hillside or the seashore; yet, its actual location is a hundred-foot lot within the very confines of New York city itself, and it fits its surroundings perfectly.
>
> Let this, then, be your introduction to the ideal house; but presented, mind you, with a full appreciation of other people's divergent views. Indeed, provision is made for differing tastes by showing the house as it would look if built of two materials other than those actually used. With the exception of two or three slight alterations in the third example, made necessary by the less plastic cement and tile, the lines in all three models are precisely the same.
>
> The house in reality, is of frame construction and shingled all over. Heavy wooden columns support the roof over the broad and inviting porch, and the architectural scheme tends toward the colonial.
>
> The house as it might be, without even the most trivial change of line, has the lower story done in brick, with stucco above, marked off with beams to produce the ever-popular English half-timbered effect. Brick pillars are substituted for the wooden columns and brick chimneys naturally supplant the field-stone chimneys that fit in so charmingly with the frame house.
>
> **Brick is a building material that can hardly be improved upon, if used properly with double walls, or as a veneer, and with an eye to the depth of color found in brick of the best quality. A brick house looks invitingly cool in summer and cheerfully warm in winter. It really is both, if the construction is good.**
>
> ### Urges Tiles on Concrete House Roof.
>
> The house as it would appear if the construction were concrete, with roofing tiles replacing the shingles, is practically unaltered in design; but it shows many minor changes made necessary by the materials employed and the Spanish feeling sought by the architect. That it bears little resemblance to the original house is true, at least at first glance; and yet, all the differences are superficial. The lines are identical, except that the roof is broken off when it reaches the porch in order to avoid a curve, and the porch openings are transformed into arches, although with exactly the same number of supports. The wide eave finish is in harmony with the general scheme, and the heavy roof seems to demand the use of supporting beams that show. Outside blinds or shutters would strike a jarring note and, so, are removed. The rustic fence, too, would be out of keeping with so formal a house and banished; but it may be found, we hope, no farther away than the backyard or the garden.
>
> Both of the revised houses would cost a little more than the frame original, if no changes were made within. How much more would depend upon many things, and would run from five to twenty per cent. Anyhow, the point to consider is the wide lattitude allowed the homemaker when he is deciding upon the ideal home. Perhaps, it will open unexpected possibilities.
>
> Our ideal house, in its actual form, is a frame structure; and this leads us to inquire whether wood can be accepted as a satisfactory material for the modern homebuilder. The obvious answer is, that the "frame house" is the characteristic American dwelling. Dating back to the days

THIS IS THE WAY THE OTHER FELLOW ADVERTISES



1912

HOUSE BUILDING AND FURNISHING ANNUAL

HOUSE—BRONXVILLE, N.Y., BUILT (1910) ON A 100-FOOT LOT

SAME DESIGN IN BRICK AND STUCCO

SAME DESIGN IN CONCRETE CONSTRUCTION

when wood was abundant in all parts of the country, and was, in fact, almost the only material available, models were developed that "fitted in" with the surrounding landscape. Architecturally correct then, the frame house can still claim that advantage, and it is not likely to lose its popularity.

Furthermore, it makes a practical habitation. With its hollow walls, it is dry and comfortable both in summer and winter; and, if properly treated, it resists the ravages of the weather. On the other hand, **it has its disadvantages. It is not fire proof; and with the rapidly increasing cost of lumber the most powerful argument in its favor—that of its cheapness—is losing weight with the average builder, to whom this is a consideration.**

Wood, however, will always enter into the construction of houses. There will be wooden shingles on some structures. Somebody has declared that "Wooden shingles are not a roof covering; they are a crime." Yet people will go right on using wooden shingles; because they are cheaper than most roofing materials, and there are certain pleasing effects that can not be obtained with shingles of any other type. There will also be wooden floors, and always wooden trim of one kind or another.

The brick and stucco house shown on the cover as an alternate model calls for materials that will be permanently popular, except in earthquake regions. Even the best brick can not resist seismic shocks; but otherwise it is a fairly satisfactory material. A brick house is warm in winter and

> cool in summer; and it lends itself to many architectural designs.
>
> Houses constructed of brick and plaster are popular in England; but the thin **stucco surface is not very well suited to American conditions,** where climatic changes are frequent and violent, and are likely to **cause the stucco to crack and to peel off.**
>
> Another variation of the brick and stucco idea involves **using hollow tile for the main construction and veneering these tile walls with a single thickness of brick.** It is merely a matter of substituting a brick facing for stone. Combinations of brick and stucco may also be used.

The above reprint is from one of several articles in which clay products are mentioned, but as it was the leading feature in the Magazine it is used to better illustrate our point.

Having shown you the trend of the entire builder's number of this Sunday magazine, which by the way has a combined circulation of more than 2,500,000, every issue, we want to call your attention to some other significant features about it.

Turning over the pages one's eye meets several columns of well written advertisement, but look as you will you do not see any of the clay product fellows represented with one exception. Page after page, however, contain advertisements for the lumber dealers' associations, the concrete fellow and their allied industries, all of which proclaim the "merits" of their products in as convincing a way as capable ad writers can do it.

"Brick and Clay Record" goes to the trouble of reproducing some of these ads. and draws your attention to them on another page. You will observe that the only avertiser of clay products in the entire list is the National Fire Proofing Co. and this enterprising company, of course, uses its space to tell about the merits of "Natco," its own brand.

While the white pine man, and the cypress man and the concrete man, as associations, were lauding their materials, the organized clay product people were silent and whatever advantage they might have had is not theirs. No criticism, of course, is made of the clay product organizations as the half-hearted support they have received from the clay manufacturers doesn't encourage or make possible expenditure for any considerable publicity. The clay manufacturer, himself, deserves the censure, because he doesn't join the organizations formed for his benefit and contribute liberally to their support and maintenance.

COMMENT FROM READERS

These Letters Were Inspired by the Editorials on Association Work Published in "Brick and Clay Record" Recently.

The editor's mail is flooded with letters inspired by the recent editorials on association work published in this journal. It is impossible to print all at this time, but room will be made in the course of time for every communication received and meanwhile we beg the indulgence of the writers.

Many good suggestions have been made in the letters reprinted in this issue and while "Brick and Clay Record" does not concur in every instance it does indorse the spirit that prompted the offering.

It is from these exchanges of opinions that we are going to get action. No great movement ever was launched and successfully carried out without full discussion from all angles.

The first letter we call your attention to is from S. M. Chase, general manager of the Chase Foundry and Manufacturing Co., of Columbus, Ohio. Mr. Chase has presented a phase of the great problem confronting the clay product manufacturer that must need be met before clay products will come into their own. His terse comment has inspired an editorial in this issue to which we call your attention. Mr. Chase's letter follows:

> In reference to the editorial in Sept. 1st issue of Brick and Clay Record, we note very carefully the reference you have made to other organizations being successful through organized effort. Reference is made especially to the Fruit Growers' Association, as well as the Cement Users' Association.
>
> We agree with you, so far as organized effort goes, but believe that the greatest drawback and the greatest difficulties that the brick manufacturers have to contend with is their alliance with the Bricklayers' Union, and the quicker they can separate themselves from this condition the better it will be for the brick manufacturer.
>
> The general public has certain rights in this country which it dislikes very much to have usurped by the people from whom it purchases goods. When a customer buys an article and pays for it, he feels that he has a perfect right to do as he pleases with that article. This right the brick manufacturer does not give him, and for this reason a great many people are using cement who otherwise would use brick.
>
> When a buyer purchases cement, there is no question as to who is going to do the work, or for what purpose it is bought; on the other hand, when a customer buys brick, he is obliged to state the purpose for which the brick are to be used, and that he will employ union labor to lay same. Otherwise he is refused the brick.
>
> You can readily see that conditions of this kind are in direct antagonism to the general public and its welfare, and as a result it will purchase any substitute it can that will answer its purpose.
>
> We therefore believe that an early dissolution between the two will be advantageous to the brick manufacturer.

Following close on the receipt of Mr. Chase's letter came one from George A. Otis, president of the Stewart Heater Co., of Buffalo, N. Y. Mr. Otis touches practically on the same subject—that of the bricklayer. However, in the rest of Mr. Otis' letter his defense of concrete as a building material, emphasizes the necessity for educational work such as has been suggested in these columns. If a man of Mr. Otis' intelligence and experience has been educated to believe that concrete is the most satisfactory building material not only because of labor conditions but because of its supposed durability, how must the thousands of unthinking people feel?

We print this letter in full because it is an object lesson in itself:

> We have read your policy for 1913. There are many good true sayings in it, but why do you not give the real reason why cement has taken such strides ahead of brick? Surely you must know.
>
> However, we will give you our ideas of the reasons. First, brick masons must be hired to lay the brick. Their pay is very high, especially for the number of brick they will lay in 8 hours. Second, any laborer can learn to handle cement in a very short time; the pay is about one-third and the amount of cement wall laid in 8 hours will be doubled and will not cost more than one-third as much as a brick wall of the same size and thickness. When the cement wall is finished, the older it is the harder it becomes until it is almost the same as stone. See the cement buildings that were made years ago all through Cuba, when they knew but little regarding the handling of cement compared with what is known today. These cement buildings and large round pillars under verandas look as if they were there in Adam's time.
>
> Now, look at the old brick walls. Do they stand the wear and tear of the different climates as cement does? We do not think so, at least this is our opinion from the experience we have had with both. We are not kickers, but remember, one story is good until another one is told, and we always like to hear both sides, then compare them.

Our friend, John Berwald of the Davenport Brick & Tile Co., of Davenport, Ia., comes to the front again. But as he is one of the most energetic workers in the three or four associations he already belongs to, it is not to be wondered that he takes a decided interest in the matters we are discussing.

Mr. Berwald, however, continues to labor under a misapprehension. He insists that "Brick and Clay Record" is taking a position we do not intend it to take. While it is possible a central organization such as Mr. Berwald suggests may be the proper method to bring about the results aimed at by this journal, that is a question we feel should be settled by the clayworkers themselves.

"Brick and Clay Record" is offering no solution. It merely urges the necessity for action—the need of every clayworker affiliating himself with the association that represents his industry. We feel, no matter what is done ultimately, that first of all we must encourage the associations already formed. When we have those already in the field thoroughly organized, it is time enough then to take up other plans.

> I see that in the issue of September 15th you have reprinted my letter, to which, of course, I do not object. I also observe that I have misconstrued the last part of your editorial of September 1st. Still in your issue of September 15th where you speak of the fruit canners of California, you are hinting along the very lines I thought you were aiming at in your editorial of September 1st, and must say I believe that quite a number will construe this as I have. It seems that you were aiming for some general association, and as one who would be highly in favor of such a general organization, educating the people throughout the United States to use brick wherever it is possible, I suggest that if you wish the support of the present associations only, such as the Building Brick, the Paving Brick Association and the Drain Tile Association, you should make this plain.
>
> We are members of all three of these associations we have mentioned, and even a member of the Iowa State Manufacturers' Association. As a small plant we are certainly showing the right spirit, according to the standard set forth in your editorials.
>
> Should a general association be formed, then, of course, it should be a topic of interest for the next National Clay Convention at Chicago. Certainly your editorials that are full of vim and vigor will do good, as the more the brickmakers are awakened out of that "little sleep" that you mention, the better it will be for all concerned.
>
> Enclosed is a copy of a letter that I have sent Mr. Platt, of the Iowa State Tile Association, as I surmise the same will be of interest to you, even if I am doing a little fault finding with your own present publicity affair. To be candid must say, as I did in my last letter that you published, that you were not any too clear on the subject, as certainly your issue of September 15th is along the line as I have believed you were aiming at, and that is to make a national organization on publicity of brick in general, which I understood you advocate in your issue of September 1st.
>
> It is just such expressions like you had in your issues of September 1st and 15th that will bring out ideas.

The copy of the letter Mr. Berwald mentions as having sent Mr. Platt, is as follows:

> Was pleased to receive yours of yesterday and note that in your own mind you are at a loss to see how any plan can be carried out that would greatly help matters. I think a publicity plan might be followed up throughout the entire United States in the leading magazines and papers. These advertisements would be educational in nature.
>
> As far as a national organization is concerned, there is really today only the paving brick and the face brick people. The drain tile people, of course, have organized in the state of Iowa, but beyond our state I am not aware there is any associated work done.
>
> If a national organization is formed, contributing to one general fund for advertising brick only, in showing where the different lines of brick would do good, it is my personal belief this would help the brick business wonderfully. As you observe in the issue of September 15th of the magazine "Brick," where they publish my letter on page 224, you will find that I have construed the "Brick and Clay Record's" editorial of September 1st just that way. Still, they themselves think that the brickmakers should join the present organizations, such as the paving brick, building brick and the tile associations.
>
> As we expect to go out of the paving brick and also hope in time to go out of the drain tile business, we have not joined the National Paving Brick association, but as yours was a state organization, we did show our good will towards you and joined the tile association, the Building Brick, the Iowa State Manufacturers' and Iowa State Brick associations.
>
> What puzzles me with the magazine "Brick" is that in the issue of September 15th they speak of the California Canning association, which has formed along the line as I understood somewhat that the magazine "Brick" was hinting at and, in fact, they are given to understand again in the September 15th issue and the explanations that they give on my letter makes it somewhat of a puzzle to me.
>
> I am making those remarks as the editor of "Brick" says that he likes to hear criticism as well as praise and I am taking the liberty of sending him a copy of this letter also.

Brief extracts from other letters are given below:

> You are on the right track and ought to be commended for your good work.
>
> OHIO FACE BRICK MFRS. ASSN.,
> By R. L. Quelsser, Sec'y.

> We believe that you are following the right lines for building up the industry in which you are interested and wish you every success in your efforts.
>
> BUCYRUS COMPANY,
> By Frank G. Bolles.

> This bureau will always be glad to co-operate with your valuable paper in your efforts to advance the interests of clay products.
>
> PACIFIC CLAY PRODUCTS PUBLICITY BUREAU, F. C. Davis, Manager.

> We have read with interest your editorial broadside on getting together to boost clay products. We believe the clay trade can be largely benefited by co-operation on every hand towards this aim, and you can certainly depend upon us to help you in any way possible. We wish you the fullest success in your efforts.
>
> CLAY PRODUCTS EXPOSITION,
> F. L. Hopley, Secy.

> We wish you well in your undertaking to stir up the brick manufacturers to the necessity of concerted and definite action along the line of interesting contractors and builders in the advantages of brick over other excavating materials.
>
> THE THEW AUTOMATIC SHOVEL CO.,
> Per D. D. Deeds.

> I am glad to know that you are interested in the work of the Iowa State Drainage Association, and I take pleasure in sending you under separate cover all of the reports of the association which have been published up-to-date. You will note that no reports were published for two years (1906 and 1907). The association was engaged in some special work at that time and did not hold annual meetings.
>
> I trust that the publications referred to will prove of interest and of value, and I assure you that we shall be glad to have you bring the work of the association to the attention of your readers.
>
> W. H. STEVENSON, Secy.,
> Iowa State Drainage Assn.

> The writer is interested at any time in anything that will stir up increased interest in our product, which is the manufacture of brick from sand and lime. We know that this does not come in line with the manufacture of the clay product, but as our product is being improved and much better than when first brought into this country, we do not see why we should not work in connection with the clay product and make a stronger association by combining. Anything the writer can do towards bringing this about he will be pleased to do.
>
> SAGINAW BRICK COMPANY,
> By John L. Jackson.

> We want to congratulate "Brick and Clay Record" on the progressive campaign mapped out for 1913. Organization for the clayworker means efficiency and salvation, and if your campaign effects such an organization, you will do a great work.
>
> Publicity and salesmanship are needed badly in the clay product industry to bring forth the sale of the only honest, tried and true building material—clay products.
>
> If we can assist you in any way in your campaign of organization, command us.
>
> CHICAGO BRICK MACHINERY COMPANY,
> Per J. J. Moroney.

John Andres, secretary of the Standard Brick Manufacturing Co., of Evansville, Ind., is enthused over the subject of organization and makes a suggestion that undoubtedly will be given the consideration it deserves by the great mass of clayworkers. His letter follows:

> Your editorial letter of September 1st addressed to clayworkers is worth gold dollars to the craft. You are not only on the right track but you have found the guilty man.
>
> It will be impossible for any one to help the brickmaker until he gets ready to help himself, and the sooner he can be convinced of this, and the sooner he makes a start, the quicker will he come into his own.
>
> The ordinary arguments which have been shot at the brickmakers by those who have been alive to the necessity for publicity have accomplished little so far, and it will take several sweeping broadsides from 12-pound guns to penetrate the armor plate behind which the brickmaker has secluded himself.

> The enterprising men behind the Clay Products Exposition Co. are entitled to and should receive the hearty support of the whole fraternity.
>
> Let the joint Committee on Publicity, named at the last convention, submit their plans and then let us "get together" and stand by them with our dollars and cents and let us give to this very important branch of our business, an investment that will ultimately bring us large and sure returns, and without which the investment in our manufacturing department loses half its value.

J. H. Payne of the Fraser Brick Co., ot Dallas, Texas, indorses the organization movement in the following letter:

> We were greatly impressed, and most favorably, with your editorial "Get Together, Clay Workers," in your issue of September 1st.
>
> Intelligent, concentrated publicity is one of the most powerful aids that can be employed in a business, and the greatest power and concentration can be developed through proper organization.
>
> We are thoroughly convinced that it is nothing but ignorance on the part of the building public as to the many advantages and points of superiority of burnt clay ware over every other character of building material, that prevents the burnt clay industry from occupying the position it should have today, instead of being in the rear, where we must all confess it is at this time.
>
> Your editorial ought to be productive of great good, and we hope to see the burnt clay industry aroused and brought up to the fighting pitch.

It is noticeable that most of the letters received, so far, are from those that have always been identfied with any progressive movement and who have worked shoulder to shoulder with each other in the associations. We like to hear from these, of course, but a few letters from some of the "sleeping" class would prove far more interesting just now. What is the matter Mr. Sleeper? Won't you wake up just this once and let us hear YOUR side of the case?

BRICK DISPLAY AT BLUE GRASS FAIR ATTRACTS BUYERS

During the past few years there has been a notable "Back to the Farm" movement; following close on its heels came the "Back to Brick" movement, which is progressing rapidly, not a small factor in its development being the growing use of the display rooms. This idea has been enlarged upon and progressive concerns lose no opportunity to display wares at expositions and fairs held throughout the country.

We have all visited county fairs to view the fat stock, the pumpkins, melons and fruit, but the brick display at county fairs is a recent innovation which is destined to play an important part in the selection of materials for homes of the coming generation.

One of the most clever displays of brick seen at county fairs this fall was that of the Lexington Brick Co., at the Blue Grass Fair, recently held at Lexington, Ky. The accompanying illustration fails to show the beauty and variety of the exhibit, but the arrangement of the display was similar to that which is regularly maintained in the offices of the company, as shown in the upper picture. This booth, at the fair, was a popular one with architects, builders and contractors, as well as laymen and, without doubt, aroused a desire in many to replace their inflammable frame buildings with neat fireproof structures, faced with brick.

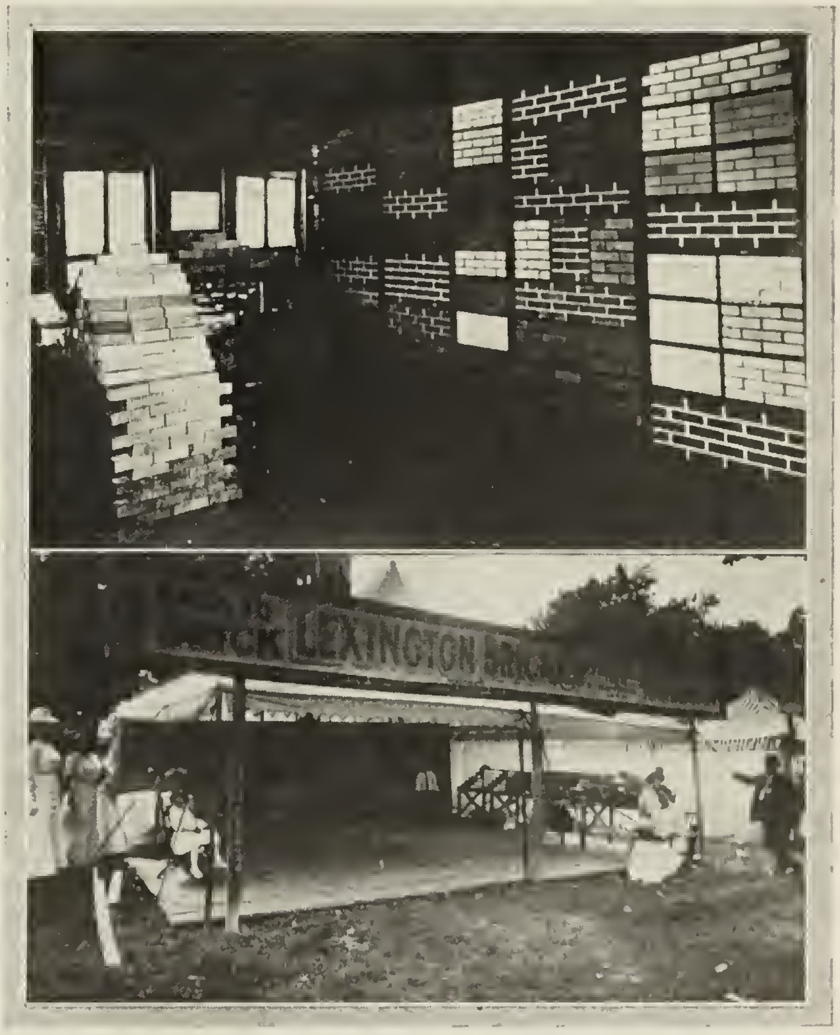
The "Lexington Leader" had the following to say in regard to the display:

"One of the handsomest and most interesting displays at the Blue Grass Fair is that of the Lexington Brick Co., which operates three factories, including the Lexington factory, the plants of Fayette Brick Supply Co. and the Central Kentucky Brick & Tiling Co.

"H. C. Cramer, general manager of the company, had charge of the display which occupied a commodious tent just inside the main entrance to the grounds, and was the first display to meet the eye of the visitor upon arrival at the fair.

"Over the entrance to the tent there was the commanding slogan of the modern brickmaker—"Back to Brick." And supplementing this was the positive and reassuring announcement—"Something New in Brick." The truthfulness of the latter was instantly realized as the visitor's eyes fell upon the neatly laid wall, comprising a variety of specimens of the expert brickmaker's craft rising imposingly at the rear of the tent, and the soundness of the argument in the slogan grew, as one examined the sample brick laid conveniently upon a rack at the side of the tent. It proved that there is quality, durability and soundness in the material that 'frost nor fire nor flood nor even time can destroy.'

"There were whites, buffs, mottled, antique, velvets and iron flashed, all finished beautifully. Some were smooth and others rough, and there were novelties, such as 'Claycrafts,' 'Hoosiercrafts' and 'Missions,' the very latest in rough texture brick that work out handsomely in construction."



In the Upper Picture is Shown the Office Display of the Lexington Brick Co. and Below Is Its Exhibit at the Blue Grass Fair.

"We got many inquiries and have booked a considerable amount of new business as a result of our exhibit at the county fair, and from customers that it would have taken us years to reach otherwise," said an official of this company, and it might not be out of place to suggest that other brick manufacturers might well profit by the example, set by the Lexington corporation and prepare exhibits for their respective county fairs.

MANUFACTURE AND SALE OF FACE BRICK

Some Difficulties Encountered — Big Stock Necessary — One Line Should Be Strictly Adhered to for Best Results—Selling Costs High.

By C. W. EMERY

IN the manufacture, of brick as well as in other avocations in life, I believe in sticking to one line. I thoroughly believe that any leading physician would have just as good an opportunity of being successful if he decided to practice law in the forenoon and devote the afternoon to the practice of medicine, as would the drain tile, paving brick or sewer pipe manufacturer, who attempts to take up the manufacture of face brick in connection with his other line.

The burning of face brick, where color as well as quality is sought, is a very much more difficult proposition than the burning of drain tile, common or paving brick or hollow blocks. A man may be an expert in burning this class of ware, and yet make an utter failure of burning facing brick.

A high-class face brick burner cannot be secured for less than from $125.00 to $150.00 per month, and he, in order to retain him, must be employed by the year, whether your plant is in operation during the winter months or not.

To be sure of obtaining satisfactory results in burning, it is necessary to have a competent man on days and another on nights, so that you will find quite an increase in your payroll for this reason alone.

I do not wish to discourage any one from entering this line of work, but I do say that if you take it up, drop everything else, as you certainly will be a very busy man.

Much Money Tied Up In Stock.

I have in mind one man who figured that he could manufacture a few face brick in connection with his drain tile business, and that it would not be necessary for him to tie up any money in a stock of face brick. When his first kiln, containing 60,000 brick, came off he sorted them in three shades in order that there might not be too great a degree of variation. He secured an order for 40,000 of one shade of these brick, shipped out the 20,000 he had in stock, planning on getting the other 20,000 to complete the order from the next kiln. The next kiln, however, did not come out the same color as the first kiln, so these bricks were piled on the yard, and another attempt made to secure the proper shade. Before he had finished his first order, he had 400,000 brick piled on his yard, and not having an efficient selling organization, was unable to find a market for them.

This is just one instance and there are many more of the same kind which go to show how easy it is to get four or five thousand dollars tied up in a stock of face brick. Had my friend continued the facing brick business for six months, he undoubtedly would have had from $15,000 to $20,000 tied up in stock.

The only really successful way of handling this line is to manufacture a stock of from $20,000 to $30,000 worth of ware, before one starts to market same.

Our company, while a small concern as compared with our competitors from St. Louis, Minneapolis, Omaha, and our Illinois friends, carries a stock, valued at from $30,000 to $40,000 and we consider that we have just as small an assortment as can possibly be gotten along with to take care of our orders in a manner satisfactory to our customers.

Selling Costs High.

The cost of selling face brick is very high. Assuming that you are in the face brick business, you hear of a school house to be erected in a nearby town. You go to this town on the day appointed for receiving bids and selection of materials. There you meet five or six other brick salesmen from the adjoining states; you spend two or three days trying to secure an audience with the school board, and after you have displayed your line, they buy some other man's material. After making 8 or 10 of these lettings, you finally secure an order for 50,000 face brick, being about the average number of face brick required for school buildings, and that will probably keep your plant busy for two days. You can figure it out for yourself, how many salesmen it would be necessary to keep on the road in order to dispose of the output of a plant manufacturing 25,000 to 30,000 brick per day.

The advertising of a line of face brick is a study in itself, and one which should be given the most careful attention by the manufacturer.

I wish to reiterate my remarks to the effect that I believe there is a great field for the face brick industry in our state, but I certainly would advise anyone to keep out of that branch of the clay industry unless he has the intention of following it exclusively, and unless he is in a position to carry a large stock of ware, and maintain a thoroughly organized selling force.

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*Excerpt from paper read before the Convention of the Iowa Brick & Tile Association, Ft. Dodge, Ia.

ARTISTIC PANELS EXECUTED FOR MONTREAL BUILDING

The accompanying illustrations show "The Steel Workers," two handsome tile panels, recently placed on the walls of the vestibule of the Standard Ideal Co.'s building, Montreal, Canada. Both are done in weather-resisting glazes and colors, which, of course, is of great importance where the work is exposed to the action of the elements in a severe climate like Canada. Each panel is 6 feet high and 2 feet wide, made of 6x6 tiles with a matt ivory glaze as a foundation for the coloring.

The painting is executed in matt enamel colors applied over the glaze, one advantage of this method of decorating being that any style of historic mural painting can be faithfully reproduced, whereas, with hand-wrought faience mosaic work, the tiles are often so crude in outline that the entire design is completely obliterated. Professor Charles F. Binns gave voice to his sentiments on this subject recently when he declared: "A few years ago architects and builders were seized with a passion for accuracy and uniformity. Brick must be sorted to a mechanical exactness of shade, roofing tile must exhibit the single color of painted tin, each tile matching its fellow, and wall tile must be so true and level that even an oblique light would show no undulation. A revolt was sure to come and architects began to search the cull piles for odd and freakish effects."

"The Steel Workers" have been favorably commented upon by various art journals, trade magazines and daily newspapers. In fact, from an artistic standpoint, this tile work and the method of painting is something quite novel. The style of Fig. 1 is somewhat realistic, while Fig. 2 is very much the opposite and really quite German L'Art Nouveau in conception. As the panels are placed some distance apart, in the vestibule, two distinct styles of paintings were permissible. Cartoons for both were painted and originated by Stewart C. Hinds, the actual painting in ceramic colors being done by Eugene A. DeLan. These artists are members of the designing staff of the Trent Tile Co., which company made the tiles for this contract, and at the present time is doing a great deal of tile work in overglaze decoration.

The Steel Workers

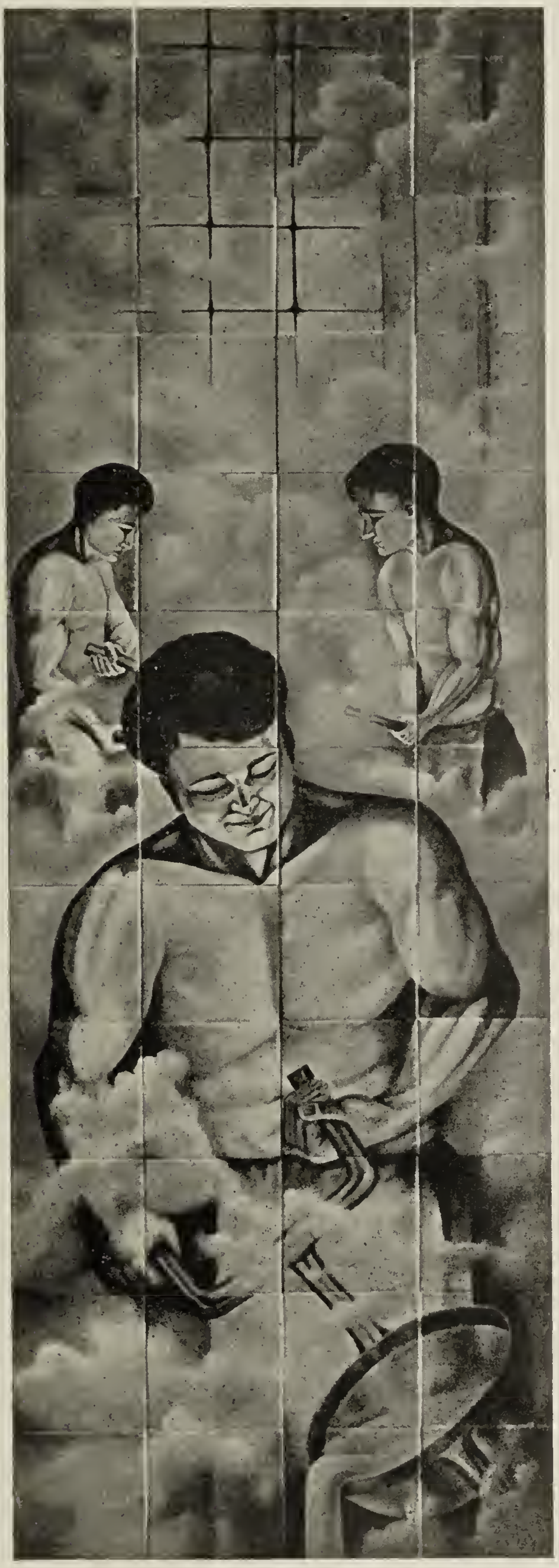


Figure 1—"The Steel Workers," Realistic Tile Panel Made by the Trent Tile Co.

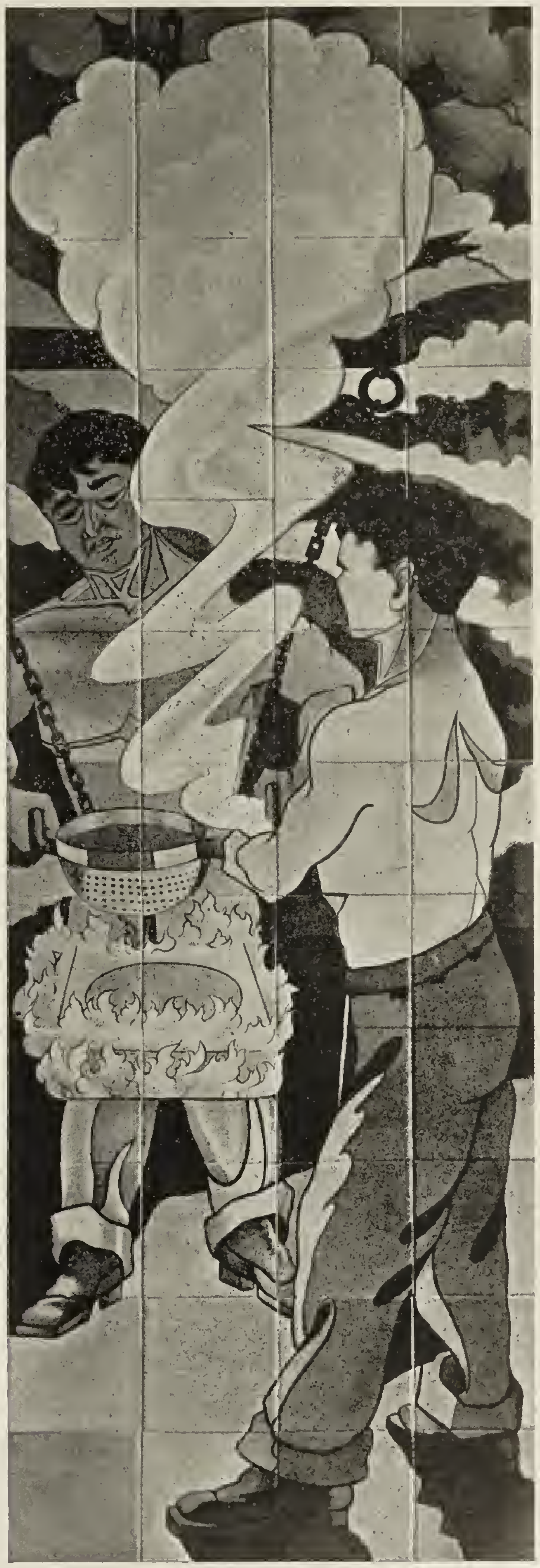


Figure 2—Idealistic Conception of "Steel Workers," Executed in Tile Panel for Montreal Building.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. OCTOBER 1, 1912 No. 7

DON'T BE A WALL FLOWER

Don't be a wallflower in the ballroom of commercial activity.

Put on your sweetest smile, twinkle your eyes in your most engaging manner and when a chivalrous partner gives you an invitation to join in the merry-making, hand him your dance programme and let him fill up the blank spaces.

No fair dancer ever became the belle of the day by sitting on a bench and casting envious glances through sleep-laden lids from behind the Fan of Inactivity towards the more lively participants in the waltz of progress.

No wall flower ever made a match with the best catch of the season—**SUCCESS**. Seize your opportunity, Miss Clayworker. Mr. Association stands before you with outstretched hands bidding you to join in with the merry-makers. Dance with him. The rhythm of the waltz will set your blood to tingling. It will mean new life to you, Miss Clayworker. It will brighten your eyes, sharpen your wits and bring out the best of your charms.

Opportunity comes but a few times, it is said. Better accept it now. Don't be a wallflower.

BRICKMAKER VS. BRICKLAYER

The cry for concrete is looked upon as the **ONE AND ONLY EVIL** the clay product man must combat, but it isn't. It is only **ONE** of **SEVERAL** that must be met and put to rout before clay comes into its own.

It is well that you direct your energies largely, Mr. Clayworker, to the common foes, but while you are standing on the firing line do not overlook the fact that within your own ranks there is **SOMETHING THAT REQUIRES YOUR ATTENTION**—something that handicaps you in the big battle you are fighting.

Suppose you **HAVE** the enemy on the run, what matters it, if you are so burdened with excess baggage you cannot give chase? What matters it if you cannot **OVERTAKE** him and render your foe hors de combat?

You have in building brick, for instance, Mr. Clayworker, a material vastly superior to anything else. By modern methods and improved machinery you have made it possible to manufacture building brick so cheaply you can compete on the open market with any other known building material. But, still **YOU ARE NOT GETTING** this superior material into the greater part of the buildings of the country. Why?

You have a material that is more lasting, that is made just as cheaply as any of its competitors and that lends itself more readily to artistic treatment, and yet the government report on the clay industry issued a few weeks ago, shows that you have been losing ground instead of gaining.

It is the labor end of it, Mr. Clayworker. You are at least on an even base with the concrete man and the lumber man when it comes to supplying the material, but you **CANNOT COMPETE WITH HIM WHEN IT COMES TO PLACING YOUR PRODUCT IN THE BUILDING.**

Lack of harmony between the brickmaker and the bricklayer does just about as much towards holding brick back as any other one factor.

A Chicago man, for instance, decides to build a house. He looks over the situation. He decides that inasmuch as brick is not affected by fire, frost, flood or time it is the ideal material. He inquires as to cost. He finds that he can buy common brick at $6 to $7 per thousand. He compares this cost with the cost of lumber and concrete. The comparison is favorable to brick.

Next he begins to figure **HOW MUCH IT IS GOING TO COST** for him to lay his brick. Then comes the rub. He is told that a common laborer can mix his cement at a cost of $1.50 per day. He finds lumber can be placed into his building by a car-

ACCEPT HIS INVITATION—DON'T BE A WALL FLOWER

penter who asks only $4.50 for his day's work, but he gets a jolt in the solar plexus when he learns that the bricklayer wants $6.50 for his day's work and $2 for a helper.

The prospective builder inquires of someone and finds out that an average bricklayer can lay 3,000 brick a day with ease. He takes fresh hope. Perhaps it is not so bad after all. He is getting $18 worth of material put into his building at a cost of $8. That is a fair proportionate cost for labor.

Armed with this information he is just about to decide that brick shall be the material he will buy when he learns that the bricklayer works under certain conditions his union has made. These conditions are that no man may lay more than one thousand brick per working day. The situation changes. The prospective builder takes his pencil and **BEGINS TO FIGURE AGAIN.** One thousand brick would cost him $6 delivered. To lay these brick he **MUST PAY $8 FOR LABOR.** That decides him. The next day the lumber man or the concrete man unloads his material on the vacant lot and another victory is scored against clay products.

This is a condition that exists, Mr. Clayworker, and it is one **YOU MUST MEET AND SETTLE** before you may hope to make much progress. And there is only one way to do this. You must fight the labor question just as you fight any other problem—with a united front.

The bricklayer **KNOWS THE VALUE** of organization just as does the cement man and the lumber man. He is so successful with his organization he can and does **FORCE YOU TO PAY HIM MORE** for the labor of laying your product than **YOU GET FOR YOUR FINISHED PRODUCT. HIS** part of the work requires one handling of the brick and little skill. **YOUR** part of it requires the expensive excavation of the raw clay, the carting of it to the expensive machinery that prepares it for the brick-making machine, the drying and the burning of the brick and its delivery to the contractor.

Don't you see the difference? The brick that must pass through all this handling, taking days to perfect, brings you $6. This same brick is laid into a wall with one simple twist of the wrist and the man that does it gets $8.

You complain to him. What happens? He tells you to go to thunder. You refuse him brick. What happens? He goes to **SOME OTHER** brickmaker and gets his brick. Who loses?

Suppose you were thoroughly organized, Mr. Brickmaker. Suppose you had a union of your own. Suppose you went to the bricklayer and told him you are willing that he **EARN A FAIR DAY'S WAGE.** That you do not object to him getting $8 for his eight hours' labor, but you do object to having him set a limit on the amount of work he shall do. Suppose you tell him that he **MUST TAKE OFF THIS LIMIT**—that he must lay a **REASONABLE** amount of brick per day—say 3,000. What will happen?

As the conditions exist today, if you refused him brick, he would laugh at you and tell you he can get material from some other brickmaker. But supposing you were thoroughly organized—with all brickmakers standing firmly together just as all bricklayers stand together, don't you see how **YOU COULD COMMAND** the situation?

If the bricklayer attempted to blacklist you **AS HE DOES TODAY**, isn't it reasonable to suppose that **YOU COULD REFUSE HIM BRICK?** Couldn't you reverse the table and force him to treat you fairly?

Join the association that has been formed to fight your battles, Mr. Brickmaker. It is a most excellent organization and is doing a great work with the limited membership it has. In spite of this handicap of a comparatively small membership the Building Brick Association is one of the most active forces in the clay product industry, but no matter how ably it may conduct the great battle it is waging for you, it never will achieve **THE FULL POSSIBILITIES** of its work until you and all other building brick manufacturers have become full-fledged active members.

BY WAY OF ILLUSTRATION

One of the popular Sunday magazine supplements issued a few Sundays ago with the great daily newspapers in several of the largest cities of the United States was devoted entirely to the subject of house building and furnishing.

This particular magazine supplement has a circulation of more than 2,500,000 every Sunday, and the various articles that were prepared by special writers and the advertising that appeared in that issue were given widespread publicity.

There is one significant fact about the supplement, however, and that is that while the lumber associations and the Cement people and all the other organized forces that fight clay products **APPEALED** to this great body of readers through well-written **ADVERTISING**—the only place that clay products were mentioned in the entire twenty pages was in the reading columns where the writers praised them in glowing terms, and in one small ad of a fire proofing maker who modestly advertised his own particular brand.

This is sighted to emphasize the point taken in these columns that clay products suffer through lack of proper publicity.

The writers throughout the magazine were favorably disposed toward brick and clay products in general, but made an effort to be impartial. Because of this the average reader was left in doubt just which material for building was the most serviceable.

Probably the editors figured that the reader would turn to the advertising columns and **FORM HIS OWN OPINION.** If the reader did, and it is reasonable to suppose that most of those interested in building did, he found the Southern Cypress fellows and the Northern Pine fellows and all the other lumber men **SHOUTING** about the "cheapness" and the "durability" of their products. He found construction companies that promised to supply him with everything from his lumber to a keg of nails at bargain prices. He found clever advertisers who baited him with readymade wooden houses. He found the cedar shingle fellow and all the other kindred lumber interests boosting their products.

Then, as he turned over the pages, he came across the cement maker's ads and he was told about stucco and solid concrete construction, but hunt as he might, the interested reader **FOUND NOTHING ABOUT BRICK** or the other clay products, until he saw stuck away in an isolated position the advertisement of **ONE SINGLE CLAY PRODUCT MANUFACTURER** who was advertising his own special brand of building blocks.

It's just this spirit of the lumber man and the concrete man that cut the production of clay products $7,000,000 last year, and the sooner the clay worker gets a little of the ginger into his own system the better it will be.

CEMENT PIPE DESTROYED BY ALKALI

Pipe Almost Entirely Crumbled Away After Three Years Exposure to Alkaline Waters—Entire Line Replaced by Vitrified Clay Pipe

By WILL L. BROWN

IT MIGHT be of interest to some of our water companies and individuals and also to some of our contractors in the region of irrigation in California, to know some of the effects of alkaline water on cement pipe. A knowledge of when not to use any material is far more just to that material than to condemn it entirely because it has failed in some intsance when it should never have been used at all.

My attention was called some time since to a cement pipe line in the upper San Bernardino Valley adjoining San Bernardino, that had become "rotten" and failed. In company with two other engineers, I made an examination of the line in question and we were much surprised at what we found.

The pipe was about 1,000 feet long, ten inches inside diameter, and made and laid under contract as a drain from a pump pit situated in a low, wet tract of land. The ground water in this tract was from three to five feet below the surface in summer, and in winter, water stood in all depressions. The soil itself is close-grained, fine sand and clay, quite heavily charged with those mineral salts commonly termed "alkali."

Caustic Solution Causes Trouble.

The "alkali" from this particular locality has never been analyzed as far as I have been able to learn, but is probably of the same composition as other white alkalies of Southern California, viz., the sulphates of calcium and magnesium, together with smaller quantities of sodium chloride, nitrate, carbonate and generally some bicarbonate. Altogether this makes a very caustic, active solution, especially that portion at or near the surface, where for many seasons the waters working up from below have brought the salts with them, and then evaporation during the succeeding dry summers has left excessive quantities of the solids, as a white incrustation or efflorescence.

The pipe was a good average cement pipe made under a 1 to 4 specification, and although no especial pains were taken, either in mixing the aggregate or in the tamping or curing, it would pass inspection without any serious objection. It was washed inside with a neat cement wash to lessen its porosity. The line was laid from four to eight feet deep, with considerable difficulty, because of water and caving trench. Some of the joints were made with plaster paris, but the joining was seldow water-tight.

The third year after laying, depressions appeared over the line and during the fourth year, several large pits formed—some of them eight feet across and of various lengths. In several instances when the surface dropped, tunnels were observed extending along the line. This sinking was caused by ground water washing the earth away wherever a pipe failed. In the fifth year the line was entirely useless, and a new line of vitrified clay pipe was constructed.

Cement Pipe Almost Gone.

An examination of many fragments of pipe taken from the line showed the cement had almost entirely disappeared from the outer portions of the pipe wall. The sand could be readily crumbled with the fingers, it often being nothing more than a sandy mud. What cement-like material still remained had no life or strength at all.

The inner part of the pipe wall where the cement wash had penetrated about three eighths of an inch was less affected and retained its form, though possessing little strength. These fragments when allowed to dry in the open air, crumbled and often fell apart.

This disintegration of cement in the presence of alkaline solutions has been very carefully investigated by the chemical department of the Montana Agricultural Experimental Station and also by the Colorado Agricultural College. The results of these independent investigations show a remarkably close agreement, and with a number of similar failures that have come under the writer's observation, indicate that the use of cement pipe in many locations is very likely to be a misuse of the material.

Reduced to Putty-like Mass.

The chemical reactions taking place when the alkaline ground waters come in contact with the cement, are very complex. The liberation of calcium hydroxide during the process of setting, and later hardening of the cement means that a compound is formed which even distilled water will dissolve and carry away. When we have this reaction and solution taking place in the presence of strong alkaline solutions and under several pounds of pressure, the effect is much accelerated. M. W. P. Headden, chemist at the Montana Experimental Station, mentions a sample of cement tiling reduced to a putty-like mass mixed with sand after being laid only eight or nine months.

These reactions are continuous; soluble compounds are formed and carried away by the percolating waters, thus constantly exposing new surfaces, and it is only a question of time when the pipe fails. This effect is readily seen in cement lined ditches carrying a constant stream and even in irrigation pipe with only an intermittent flow.

Water in Southwest Mostly Alkaline.

All the ground waters of the Southwestern United States carry a considerable content of these alkali compounds, especially magnesium and calcium sulphates. All sulphates are very active in their action on cement and magnesium sulphate is the most active of all. The water coming from our granite mountains contains this salt in very large proportion. Its action on cement can be clearly observed in every cement lined conduit, even the stones laid in cement mortar and lining many ditches, can often be lifted out or will drop, after two or three years of contact with the running stream.

Most interesting and complete discussions of this subject are given in Bulletin No. 132 of the Colorado Agricultural College, and in Bulletins 69 and 81 of the Montana Agricultural Experiment Station.

Quoting from Circular No. 8, issued by the Montana Experiment Station: "We recognize this as a cement age, but this fact does not warrant its use in important structures by people who have not given it some special study. With our present knowledge we could not advise the use of cement pipes for drains or sewers where they are to be laid in alkaline ground. When prepared by the boundary methods we believe that concrete should not be used where solutions of alkali will come in contact with it. In such pipes or drains the pressure of the ground water tends to force the alkali through the concrete and hasten the disintegrating action."

Here in Southern California where hundreds of thousands of dollars in crop values depend on irrigation, the users of this kind of pipe should investigate this matter for each location or system, as the failure of a pipe line during a critical period in our dry summer might mean the loss of many times the cost of a more durable material.—Cement and Engineering News.

INDIANAPOLIS TO HAVE SKYSCRAPER.

Twenty-two Story Building Calls for Large Quantities of Burned Clay Materials.

Indianapolis, Ind., is soon to have its highest building in the twenty-two story structure to be erected by the Public Savings Insurance Co. of America on the site of the present Unity Building in East Market Street, but the detailed plans will not be ready and contracts will not be let until spring. Rubush & Hunter, of Indianapolis, have been selected as architects and have completed the perspective and rough sketches of the floor plans.

Public Savings Insurance Co. Building, Indianapolis, Ind.

It is estimated that the building will cost $1,000,000 but it will not be ready for occupancy until some time during 1914. The highest buildings in Indianapolis are the Washington Hotel and Merchants Bank Building, a sixteen-story structure nearing completion.

The new building will be 67½ feet by 195 feet and will have entrances on Market Street and Court Street in the city's real estate center. For the first four stories of the Market Street front, Barre granite will be used with pressed brick and glazed terra cotta for the remaining stories. Granite columns will extend from the sidewalk to the fourth floor, surmounted by a cornice with a richly ornamented frieze and topped with a pediment belt course the full height of the fourth story. This in turn is to be finished with a cap extending through the five upper stories and will be composed of a belt course at the eighteenth floor. Pilasters will extend from the eighteenth to the twenty-first story.

All of the structure is to be of the steel skeleton type, fireproofed with hollow tile blocks. The floors and partitions will be of the same material and the elevators and stairways will be encased in hollow tile shafts. As will be seen, large quantities of burned clay materials will be needed in the construction of this building.

FIRE CLAY PRODUCT SHIPPED 2,000 MILES.

Denver Fireclay Company Closes Big Annual Contract with Philadelphia Firm.

Denver's leadership in a new line of industry was demonstrated when a Philadelphia manufacturing company made arrangements to purchase fireclay products of a value ranging from $50,000 to $100,000 annually from a Denver firm.

L. H. Webb, secretary of the Wedge Mechanical Furnace Co., of Philadelphia, recently closed a contract with W. W. Case, president of the Denver Fireclay Co., for all the special material of a kind adapted to the wants of the furnace company that the Denver concern will be able to manufacture outside of existing contracts with other purchasers.

A Denver newspaper states that Webb said his company had investigated the fireclay situation the country over, and was of the opinion that the Denver product was so much superior to Eastern makes that the company could afford to ship it the 2,000 miles necessary to use it in its furnace making. The fireclay used by the Denver company is mined near Golden.

NEW USE FOR CONDUITS.

Wealthy Merchant's Wine Cellar Fitted Up With Conduits for Wine-Bottle Receptacles.

The management of the Philadelphia office of the General Electric Co. reports a new use for terra cotta conduits. In the home of a wealthy wool merchant of that city, a wine cellar was installed by using 600 feet of terra cotta cable conduit each one foot long by four inches in diameter, placed at right angles in the cellar walls into which wine bottles can be placed, away from danger of breakage, because each bottle has a receptacle of its own and its contents are made free from the damaging effects of light and varying temperatures.

This only demonstrates that more than one kind of "juice" can be conserved by the use of burned clay conduits.

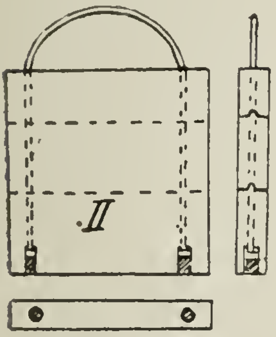
It is a short-sighted man who cannot see that he should get more for his brick than they cost him, but how many clay manufacturers have a cost system in use, by which they can tell the exact cost of their finished product?

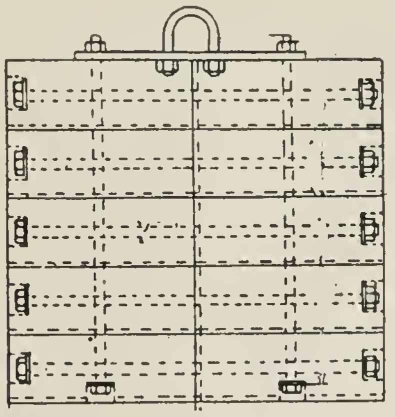
DURABLE KILN DAMPERS.

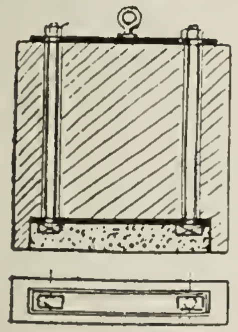
Practical Suggestions by British Clayworker Which Are Easily Adaptable to American Conditions.

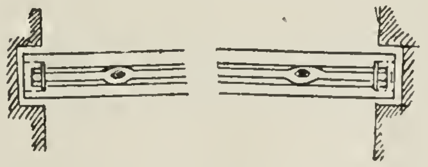
Every burner knows that unless his dampers are in good condition they will be worse than useless, yet to keep dampers in proper order is no easy task. Much may be done by using fireclay slabs in place of the iron sheets so often employed, but in this case it is necessary to have some means of effectively joining several slabs together, particularly for the larger dampers. Two methods of doing this are shown in the accompanying illustrations, the iron bolts used for the purpose being indicated by dotted lines. Where three slabs are sufficient to form the damper the ironwork may conveniently be in the form of a U as in fig. II., the bow at the top serving as a convenient handle. Where the damper is so wide that it is not desirable to have the slabs the whole width of it, a series of cross bolts is necessary, as shown in another illustration.

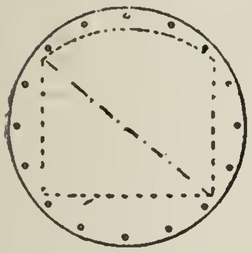
A simple and convenient means of fitting a ring or handle to a single slab damper consists in boring two holes vertically through the slab or, preferably, to arrange for these two holes to be formed during the moulding, and to attach a short length of bar iron carrying the ring.











The bolts fasten this bar securely to the slab and are, at the same time, fully protected from the heat. It is advisable, but not essential, to fill in the recess left in the bottom of the damper with a mixture of cement and sand or with fireclay, as the nuts of the bolts are thereby protected.

In making dampers for cross flues, it is important that they should be of ample size. There is a tendency in some districts to make the dampers as small as possible—a serious mistake, and one which leads to unnecessary leaks. In the accompanying illustration, the circle shows the smallest size of a damper to fit the end of the flue shown in dotted lines. In practice it is often more convenient to make the damper rectangular or square rather than round, but in such a case the damper must be larger than the circle shown. To make a damper one inch larger all around than the flue it is to control, is to run risks which no wise kiln builder will undertake, for he knows that ample material outside the flue section is necessary to secure tight fitting. A useful rule is to make the damper as wide as the diagonal of the flue. In the illustration, this diagonal is shown as a dotted line running from the springer of the arch to the bottom corner of the flue at the opposite side. If the flue is a square one, this rule will provide a damper whose width is nearly 1½ times the width of the flue, a rather liberal allowance for overlap which is nevertheless better than a damper which fits too loosely and is deficient in overlap. For very tall and narrow flues the "diagonal" rule gives an excessive overlap; with such flues it is sufficient to give an overlap of 3 inches all round.—Brick and Pottery Trades Journal.

IMPORTANT LEGAL DECISION.

Discrepancy of Measurements Results in Dispute Claims as to Amount of Brick Furnished.

Number of Brick and Time for Filing Lien.—In a suit to foreclose a mechanic's lien where it was claimed that 603,300 brick were delivered to the defendants and used in the building, but the defendant claimed that no more than 562,614 brick were delivered by the plaintiff and used in the building, the evidence did not appear to be in conflict, except as to the manner of arriving at the number of brick furnished. The plaintiff and his foreman testified that the brick were loaded in the yard and started for the car barns under the supervision of the foreman, who kept a record thereof in the form of small stub books of about 100 tickets, of which there were an original, duplicate and triplicate. When a load was sent out, one of these tickets was filled with the number of brick forwarded, nearly every load containing 1,950 brick. The duplicate and triplicate were then given to the teamster, one to be left at the place of delivery, and the other signed by the person to whom the brick were delivered and then returned to the plaintiff, who from the stub of his ticket book each day copied on tally sheets, from which he made up his account of 623,300 delivered brick. After the completion of the brickwork the plaintiff and the defendants agreed to, and did, "lump off" the brick remaining unused, estimating the number at 20,000.

Discrepancy of Measurements.

But for the purpose of ascertaining the number of cubic feet therein, two competent engineers measured the walls of the building, one computing the number as 34,756, and the other as 34,444 feet; the number of brick to each cubic foot being variously estimated at from 18 to 21. The discrepancy in their measurements created a difference of about 6,000 brick, taking an average estimate per cubic foot. Then there was the usual waste to be considered, making it evident that any estimate is inaccurate, and, unless agreed to by the parties themselves, or rendered absolutely necessary, such a method, the Supreme Court of Oregon says, Wills vs. Zanello, 117 Pacific Reporter, 291, should not be adopted, except in connection with the other evidence.

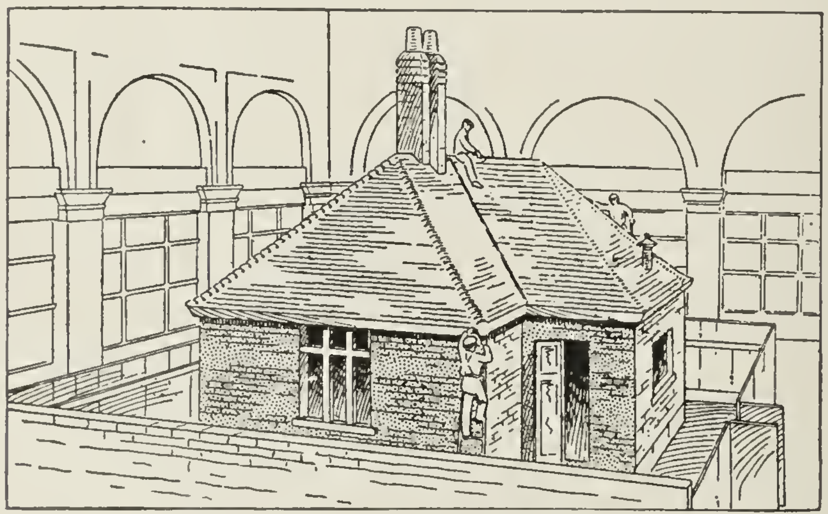
From a consideration of all the evidence, the court is of the opinion that 603,300 brick were delivered to the defendants and used in the building, such being the number claimed to have been delivered by the plaintiff, after deducting the 20,000 estimated as unused.

Then, from the evidence it appeared that the plaintiff finished his delivery of the brick about September 27; that the brickwork was completed about October 13, and that the lien was filed on December 3, before the building was fully constructed. The defendants claimed that this lien was not filed within either of the sections of the Oregon statute; that is, that between the time allowed for filing, within 30 days from the time of furnishing the material and before the commencement of 30 days after the completion of the building, there was a hiatus, during which period such lien could not be filed. But the court says that, construing together the two sections of the statute alluded to, it has held that the laborer or materialman must file his lien within 30 days after the completion of the building, not necessarily within 30 days from the date of ceasing to furnish labor or material; and it holds that the lien was not prematurely filed in this case. It says that to hold that one furnishing material to the person having the contract for the brickwork of a building must, before filing his lien, wait until the other contractors—the carpenter, tinner, plumber and painter—finish their contracts, and the building is completed (which is often a question of dispute) and thereby limit his time for such filing to 30 days thereafter, would nullify a part of the provisions of the statute.

STUDENTS BUILD BRICK HOUSE.

Construction of Four-Room Brick Cottage, Part of Architectural Course in London School.

The complete brick house, shown in the illustration, was erected in the big hall of a schoolroom in London by a dozen students, as a part of their course in architecture at the London County Council School of Building, says "Popular Mechanics." All the work on the structure was done by students, and it is the intention to remove the house outside and then use it for a students' club house. It is in the style of a Tudor cottage, with a red-tiled roof and contains a breakfast room, dining room, bed room and bathroom. Other students of the school are making furniture for the house.



(Courtesy of Popular Mechanics.)

Brick House Built by Students in English School at London.

To Fasten Screws in Brick Walls.

A simple way to fasten screws in tile or brick walls is to drill holes, not too large, for the screws, then tear up some paper, wet it and make a pulp. Pack this pulp tightly in the hole and turn in the screws. The screws will stand a great deal of strain.

RED BRICK FROM WHITE BURNING CLAY.

Application of Acid Determines Character of the Clay—Those Which Fizz Burn White.

An inquiry in a foreign clay journal as to what substance should be mixed with a white burning clay to produce red brick was answered as follows:

"Place a handful of each of the separate clays on a large plate, spreading the clay out so as to make a layer about one inch thick, then add very carefully, one drop at a time, a little hydrochloric acid or "spirits of salt." Watch very carefully the effect of the acid, and notice whether it fizzes and forms bubbles or froth when it falls on the clay. Put those clays which do this to one side. They will all burn white.

"If you can find a clay amongst those remaining which does not fizz or froth with this acid, you will probably find that it will make red brick when used by itself. There is no need to add any chemical to it in the making.

"There is no substance which can be added to clays which fizz with acid, in order to make them burn red. The cause of the white and yellow color, when burned, is the presence of chalk in the clay, but this chalk is in the state of so fine a powder that it cannot be removed by any ordinary method of treatment.

"You may be able to purchase ochre or very fine oxide of iron, and add about two ounces of this to each pound of clay. This would give you a red brick, but the color would be so irregular and the cost of manufacture so great that you would not find it satisfactory."

Split Roofing Tile.

Too rapid cooling of roofing tile results in split tile. Some remarkable "freak tile" result from too rapid firing or cooling, and the successful burning of this clay product is only attained after much study and experimenting.

Another cause of cracked tile is the use of too lean a clay, which produces a mixture that is not sufficiently binding to produce successful tiles. The very leanness of the material helps it to dry well and easily, but as soon as the temperature inside the kiln reaches a good red heat, the tiles become so open and are so weak that it is not surprising that there is a large percentage of loss. The addition of some rich fat clay would result in improving the quality of the tile and consequently greatly lessen kiln losses.

TRAVELING BRICK DISPLAY.

Exhibit of Brick on "Made in Pittsburgh" Train Results in Some Fat Orders.

J. W. Wardrop, manager of the sales department of the Pittsburgh-Buffalo Coal Co.'s brick department, represented Mayor W. A. Magee of Pittsburgh, on the "Made in Pittsburgh" train in its trip around the country. He also had charge of the brick exhibit of the Pittsburgh-Buffalo Coal Co., on this train. Ten panels of brick were arranged on one side of a large Adams Express car in addition to a well arranged brick mantel, the latter being built by the Semple, Crawford & Gibson Brick Contracting Co., of Pittsburgh. It was the only display of brick and clay products on the "Made in Pittsburgh" train, and reports are to the effect that the company booked some nice orders as a result of its effort in this direction.

Try an Ad in Brick and Clay Record's Classified Ad Section.

TO EXTEND USE OF PAVING BRICK.

Interesting Educational Campaign to be Conducted by the Chicago Paving Brick Bureau.

There is a very busy season ahead for the Paving Brick Publicity Bureau in Chicago, during the next few months. Preparations are being made now for a series of illustrated lectures on the advantages of paving brick for streets and highways. These lectures will be given frequently and there will be an active campaign carried on in and about Chicago among those interested in paving.

The work that has been mapped out for months to come by the bureau is to include some very wide awake lessons to the public. Along with other reforms that are being brought about in the city of Chicago, the paving brick men will do what is possible to prove to the municipal officers and the public as well, just what the many advantages of the brick streets are, chief among them being their lasting qualities and low maintenance charges.

A great effort will also be made to extend the use of brick for paving country highways, and the illustrated lectures will be given at various points where the question of material for road surfacing is to be settled, thus demonstrating what is and can be done when brick are properly made and laid. The effects of this work carried on during the winter months cannot but result in much good to the cause, bringing about the more general use of brick in Chicago and the surrounding country.

PULL ILLINOIS OUT OF THE MUD.

Many Questions of Importance Discussed at Illinois State Good Roads Convention—Convict Labor Advocated.

"Pull Illinois out of the mud" was the popular slogan at the State Good Roads Convention held at Peoria, Friday, Sept. 27th, under the auspices of the Illinois Highway Improvement Association. The chief topic for discussion was the best means of spending the $400,000 in the state treasury, accumulated from the fees collected from motorists for registration. There was a general demand among the farmers to divide this money among the various townships, as provided by law, but as such distribution would give only a couple of hundred dollars to each township, the Good Roads Association is in favor of using the money for the construction of cross state highways. At the time of going to press, we have not been able to secure information as to just what measures were adopted at the meeting.

Many prominent good roads advocates were present at the meeting, including Jesse Taylor of Ohio, John D. Schoop, assistant superintendent of Chicago Public Schools and president of the Illinois Teachers' Association, and T. J. Tynan, the famous Colorado penitentiary warden, who inaugurated the "honor system" in the penitentiaries of the country. In four years Mr. Tynan has built one thousand miles of roads in Colorado with labor worth $2.00 a day but which cost only 28 cents. Mr. Tynan states that only one prisoner out of every 200 escapes, although 50 per cent of the prisoners are working outside of the penitentiary walls without armed guards, many times, miles away from the prison.

While the general public is against the contract system of prison labor, the labor unions have endorsed the use of convicts for road work and the excellent roads which they have produced would seem to indicate that this would be one means of solving the problem of securing good roads and at the same time giving some return for the expense, to the government, of maintaining the thousands of convicts in the United States.

ROAD CONGRESS IN SESSION.

Many Prominent Personages Present, Including Governor Wilson, of N. J., Democratic Nominee for President.

Of especial interest to engineers, highway officials and manufacturers of road material and machinery is the construction and maintenance section of the American Road Congress now in session at Atlantic City, N. J. This section will deal with streets, roads, park drives, bridges and culverts. The subjects discussed will be sub-divided in a manner unusual to road conventions. Instead of subdividing the subject under the headings of different types of roads, the division will be made on the different problems of road construction.

Practically all the Governors in the United States appointed delegates to represent their respective communities at the Road Congress.

Governor Wilson of New Jersey did not appoint delegates to the Congress because he expected to be present himself to make the address of welcome while the Highway Commissioner of the state will preside over the construction and maintenance section.

A number of railroad presidents will be present and among the distinguished foreign representatives are the Minister of Agriculture and Roads of the Province of Quebec and Hon. J. E. Caron, Chief Engineer de Pulligny of the French government. A full account of the meeting will be given in our next issue.

COXEY TO BOOST ROAD BOND ISSUE.

Famous "General" Gets Idea from Brick Highway, Figures Out Amendment Which Would Please All.

Gen. Jacob S. Coxey, famous as leader of the march of the unemployed army from Massillon, O., to Washington in 1894, made a march upon Cleveland, recently.

According to the "Cleveland Leader," Coxey will lead an army of good roads advocates on the state capital in Columbus, sometime ere spring opens.

"When I struck the brick pavement seventeen miles south of Cleveland this morning, I thought immediately of the amendment on good roads to the constitution of Ohio, which was defeated," General Coxey explained.

"It would be so nice for all of us if we had paved roads throughout the whole state. I tried to figure out an amendment which would be acceptable to the people. The farmers will not support any amendment like that proposed, for they will not pay 4 or 5 per cent interest on bonds.

"The plan is to issue $100,000,000 worth of bonds bearing one-half of 1 per cent interest payable June 20 and December 20, so as to make them receivable for taxes. The bonds would be issued in denominations of $1, $2, $5, $10, $20, $50, and $100, the state agreeing to levy a tax sufficient to collect $4,000,000 annually to redeem the bonds, thereby paying the total in twenty-five years."

But that is not all. The bonds would also be a monument to General Coxey's dead son, "Legal Tender."

"The bonds would circulate just the same as money, and it would be advisable to have the words 'legal tender' printed on them," General Coxey explained. "They would be more desirable than currency, for they would draw one-half per cent interest."

The plan is to organize an army of wealthy auto owners to storm the state capital. Coxey, who owns a fine limousine, would of course, lead the van.

NEWS IN PAVING BRICK CIRCLES.

Brick Pavements Growing in Favor With Many "City Fathers" and County Commissioners.

State street, the longest and widest street in East St. Louis, Ill., and the principal thoroughfare between East St. Louis and Belleville, is to be improved. After an agitation that has continued more than three years, the Board of Local Improvements on Sept. 11 ended the public hearing and instructed City Engineer Edwin F. Harper to prepare an ordinance. After confirmation, contracts will be awarded. The work will be in progress by November 15, it is believed. The street will be paved with vitrified brick at a cost of about $315,000. Next to the great outlet sewer just completed at a cost of $850,000, this is the largest improvement ever undertaken in East St. Louis.

County commissioners, at Washington, Washington county, Pa., are receiving bids for the furnishing of paving brick for 1,909 square yards of paving on the Pigeon Creek road. Within a few years, all the principal roads in Washington county will be paved with brick, as no other road construction material appears to be in favor with the county commissioners.

D. W. Dillman of Altoona, was selected by Mayor S. M. Hoyer, of Altoona, himself interested in the brick manufacturing business, to go to Cleveland, O., and assist the city engineer of Altoona in making tests of paving brick, which it was proposed to use in municipal street improvements in Altoona.

A brick sidewalk is to be built about the Mason Library, Pittsfield, Mass. The walk will be seven feet in width, the foundation to be of cinders with four inches of concrete, surfaced with Harvard brick, similar to those used for facing the building, laid in herring bone design.

The Board of Public Improvements, Joliet, Ill., has made estimates, totalling $60,000, for the improvement of South Bluff and Railroad streets. There has been considerable agitation as to the material to be used for surfacing the streets. The backers of brick paving urge that it would be the most durable and if properly laid would last 25 to 30 years.

The property owners of Eleventh street, Racine, Wis., have asked that their street be paved at once with brick. The petition was signed by a majority of the property owners and the matter will soon be taken up by the city council.

The new brick being put down on Washington street, Brattleboro, Mass., have proven to be of excellent quality. Samples were examined by H. H. Hayward of the Massachusetts Institute of Technology and the loss was found to be below 20 per cent. The report read as follows:

"Specimens: Ten dark red brick, 7⅝ by 3⅜ by 2¼ inches were dried at 100 deg. F. for three hours before first weighing and then were rattled in a Standard machine using a charge of new cast iron spheres of the size recommended by the American Society for Testing Materials July, 1911. The abrasive charge weighed 300 pounds. The rattler made 1,800 revolutions in 59½ minutes.

"The weight of the 10 brick in grammes before rattling was 21,495 and after testing 17,449, a loss of 4,046, or 18.8 per cent. The brick came out of the rattler rounded at the edges and corners, a few of them being slightly chipped. None of the brick were broken and no chips of any size were noticeable. The report is considered very good."

It is understood that the Ohio Good Roads Federation will hold a meeting in October, to take under consideration recommendations to the Ohio Legislature, in an effort to secure legislation that will take the place, so far as possible, of the constitutional good roads amendment which failed to pass.

W. P. Blair, secretary of the National Paving Brick Manufacturers' Association, has recently returned to Cleveland, after inspecting some of the New York vitrified brick highways, which are built out of the city of Buffalo. He was also in attendance at the recent International Congress for Testing Materials at Pittsburg, when crushing tests of brick were made.

The Board of Public Improvements, St. Louis, Mo., has awarded contracts for street work at a total cost of $146,868. This amount is awarded as follows: Brick $67,247, Asphalt $24,977, Telford $31,219, Wood $23,424.

APPROVES OCEAN TO OCEAN HIGHWAY.

Director of Public Roads Thinks Costs Figured Too Low—Favors Movement.

Logan Waller Page, Director of the Office of Public Roads of the Department of Agriculture, and reputed as the best known road expert in America, has approved the plan that was started by the automobile manufacturers of Indiana for an ocean-to-ocean highway.

Mr. Page said that the movement will be valuable to the cause of good roads as a propaganda, though he was sure the promoters have figured too low in estimating the cost of such an undertaking. He said that $20,000 could safely be counted upon as an average cost per mile of such a highway, taking into consideration the mountains to be crossed. This would then make the total cost about $60,000,000 instead of $25,000,000 as estimated at the beginning, while the fund raised as a "starter" would not build more than 15 miles on the general average basis of construction.

"Nevertheless," said he, "I am glad that the movement has been undertaken. It cannot but result in general good by awakening public sentiment to the necessity of cooperative plans for road building."

More Than Ten Billion Brick.

The statistics, recently issued by the U. S. Geological Survey, show that over ten billion brick were produced in the United States, in 1911. Owing to a typographical error in our last issue, it was made to appear that only about ten million brick were produced. The fact is that in the production of common brick alone, New York and Illinois passed the billion mark. Pennsylvania coming third with 774,122,000.

POTTERY NEWS

MUCH ACTIVITY IN THE INDUSTRY.

Sanitary Branch Has Had Unusually Prosperous Year.—Liberal Orders Being Placed.

With about three months of 1912 being designated as dull months by the domestic pottery manufacturers of the United States, the fall season has started in with a rush, and all potteries, both in the east and west, are exceptionally active now. The same can be said about the sanitary branch of the trade, but this particular branch of the trade has been a bee-hive of activity throughout the entire year. It is admitted to be a fact that politics is not cutting much figure in business circles, this year. Buyers of both domestic and sanitary pottery are placing more liberal orders now than heretofore this season. A special effort is being made to keep up stocks so that when the holiday rush comes the shop keepers will not be short on domestic pottery. Jobbers in sanitary pottery are also carrying large stocks, and the trade, as a whole, is in better condition right now than it has been at any other time during the present year.

Announcement will soon be made of the appointment of committees, time and place of meeting for the joint conference between the representatives of the National Brotherhood of Operative Potters and the Sanitary Pottery Manufacturers' Association, which has for its object the adjustment of a wage scale and working agreements for the two years following November 1 next. The Brotherhood has appointed its conference committee, this being a part of the work of the Annual Convention of the Brotherhood. It is just possible that the coming conference will be held in Atlantic City or some other "seaport" city.

The terra cotta department of the Gladding, McBean & Co.'s pottery at Lincoln, Col., is adding to its force of employes and preparations are being made to run the plant throughout the winter.

No information is obtainable in the western pottery district as to the building of new plants at Washingtonville and Scio, O., schemes which were announced a month ago. In each instance, a bonus was asked from the two towns, and while some effort was made at the time to create a fund for this purpose, the final arrangements preliminary to building construction have not been made.

Fire of incendiary origin is believed to have been the cause of the destruction of the pottery of the Portland Stoneware Co., at Portland, Me., a fortnight ago. At the time of the fire, a number of the employes of the company were on a strike.

Plans for increasing the capacity of the plant of the Paden City Pottery Co., at Paden City, W. Va., are maturing. The company began operating, early this year, with two kilns, and its business has increased so rapidly that additional capacity is required. The success of this company has caused the "pottery building bug" to sting a number of business people at Sistersville, W. Va., and the matter of building a new pottery there has been talked of. Sistersville and Paden City are only a few miles apart, and are joined by a trolley line.

The McNicol-Corns Pottery Co., of Wellsville, O., which was recently formed with $60,000 capital stock, to take over the Smith-McNicol pottery at Wellsville, may increase the plant's capacity. The company is now considering the erection of additional kilns, providing it can obtain enough additional ground from the City of Wellsville, for that purpose. Samuel A. Frost, the well known modeler, and a former resident of Trenton, N. J., is now a member of this company, and has charge of the clay departments.

Louis A. Galbraith, for the last year a designer and draughtsman for the Trent Tile Co., of Trenton, N. J., has left for Kansas City, Mo., to enter the Presbyterian College, where he will study to become a minister.

With the completion of a new five-story building which is about to be erected, the capacity of the Trenton (N. J.) Fire Clay & Porcelain Co. will be almost doubled. Work on the foundations for the building is now under way and the operation will be completed before cold weather sets in. W. J. and J. H. Morris have the contract for the brick and other work.

The building will have a frontage of 50 feet on Lalor street and will extend 260 feet along the canal. The structure will be of brick, absolutely fireproof, with a steel frame.

The building, which will be one of the most modern of its kind in the city, will cost $50,000.

Operative potters throughout the United States, by referendum vote, have decided that the employment of a national organizer at this time is not required, although the motion to employ one was passed at the last Atlantic City convention, and before becoming operative was referred to a vote of the entire trade. The organizer was to receive a salary of $1,400 annually and traveling expenses, spend six months of his time in the western field and six months in the east. Both domestic and sanitary branches of the trade were to be canvassed for new members. Now that the trade has looked with disfavor upon the proposition it is possible that it will again bob up at the 1913 convention of the workers.

Sanitary Branch Rapidly Advancing.

That the sanitary branch of the pottery trade is rapidly advancing is shown by the report that the Great Western Pottery Co., of Tiffin, O., will increase the capacity of its works by the erection of additional kilns. In the last ten years, there has been a wonderful increase in the production and consumption of sanitary pottery, and as the years advance, the consumption and production steadily increases. The proposition to place a sanitary pottery in the East Liverpool district has not been given up, although no active plans have been worked out during the last fortnight. Charles W. Franzheim and other associates of Wheeling, W. Va., is interested in this movement.

The new sanitary pottery at Clarksburg, W. Va., which in the pottery world has taken the place of the Radford Pottery Co.'s plant there, is steadily increasing its production. Although a new shop, the company is booking an extensive volume of business, and the plant is being worked to capacity as closely as possible.

The Tritt China Co., of Niles, O., because of an increase in business, has been compelled to enlarge its decorating shop. This plant was first erected by the Bradshaw China Co., and when that company went out of business, the property remained idle for several years. Fifteen months ago the Tritt China Co., of which William

Tritt, formerly of the Crooksville China Co., of Crooksville, is at the head, took over this plant, and holidays and Sundays are the only days the plant has not been operated.

J. R. Warner, formerly at the head of the Warner-Keffer China Co., a concern which went into bankruptcy some months ago at East Liverpool, O., is now in the west, and it is likely that he will engage in some other line than manufacturing pottery. For many years Mr. Warner was interested in farming, owning one of the most productive farms in Ohio, and it is possible that he will engage in that business again.

Although the little town of Salineville, Columbiana County, Ohio, was nearly wiped off the map several weeks ago because of continued heavy rains and floods, not the least damage was done the plant of the National China Co., of that place. The property loss at Salineville has been placed at over half a million dollars.

Another stoneware pottery is expected to be placed in operation in the vicinity of Paducah, Ky., by a number of business men of that place. Options on clay lands have been taken and a syndicate, headed by Thomas L. Walker, of Lexington, Ky., formerly postmaster of that city, is engineering the project.

Fred S. Kent, foreman of the decorating shops of the Homer Laughlin China Co., at Newell, W. Va., and who has been with the company for 27 years, has resigned, and will locate in Los Angeles, Cal., where, with his brother, he will develop a large tract of land. Mr. Kent has been succeeded by Frank Martin, who has been with the company for the past 20 years—both records for long service are not often equaled in the East Liverpool pottery district.

Art pottery of Indian designs is being made in considerable volume by the Newcomb Art Pottery at New Orleans, La., which plant is the only one of the character in the south.

The Globe Pottery, a six-kiln plant located at East Liverpool, O., went into the hands of a receiver Sept. 24. Willard R. Morris, who has been sales manager of the company, being named receiver, by the Common Pleas Court at Lisbon, O., and whose bond of $10,000 has been approved by the court. Prior to the petition being presented to court, the Croxall Chemical & Supply Co., of East Liverpool, filed a claim against the company for $503.29. Judgment was allowed by concession.

Under the order of court, the receiver has been authorized to operate the plant and continue the manufacture of ware. It is asserted that the assets of the company exceed the liabilities and that all claims will be paid in full.

A farm three miles from Moosomin, Canada, underlaid by immense deposits of brick clay has been purchased by a syndicate composed of Moosomin and Winnipeg capitalists, who propose to establish a modernly equipped plant on the property.

A new clay manufacturing enterprise is to be added to Sugarcreek, Ohio's, already numerous clay plants and paving brick will be the chief product. The company is composed of Sugarcreek business men.

ECONOMICAL DELIVERY EFFECTED.

Real Saving in Transportation by Electric Truck Being Recognized by Brick Men.

The actual dollar and cents value, the real economy of electric commercial vehicles, is coming to be recognized more and more, daily, by thinking brick men.

From its earliest days, the electric truck or delivery wagon has been acknowledged to be one of the most potent advertising forces a merchant or manufacturer can employ. Too often the economy side of the question has been overlooked. The live business man has been in the habit of saying, "I will spend the amount of money to advertise my business by buying a truck or delivery car."

Then, when he came to investigate the merits of different types of cars, with a view to choosing the one with greatest advertising value, his choice naturally rested upon the electric. The electric is noiseless, dustless, smokeless, and free from annoying odors. The electric spins along the streets almost without a sound—with a sort of majestic dignity that gives the person who sees it—most surely and strongly—a good impression of the company that employs it.

However, although the advertising value of an electric commercial vehicle is important, still more important is its value from an economical standpoint. With an electric, the cost for operation stops when the vehicle stops. Thus there is no running expense while a truck is being loaded and unloaded. The average length of life of an electric car is ten years—much more than the term of efficient service of a horse. Its average incidental upkeep cost is less than $10 a month—little more than the blacksmith's and veterinary's charges average.

That the popularity of the electric commercial vehicle is not confined to any one part or parts of the country is asserted by F. T. Guendel, an electric vehicle expert of New York, who recently made a tour of inspection covering the entire United States. Though New York, of course, leads the list with over 1,200 electric commercial vehicles in daily service, other cities everywhere are using this type of vehicle in great numbers,—the proportion of vehicles in use to the population being almost as great as in New York. Live and progressive men in every town are recognizing the superiority of electrics for delivery and truckage, as well as pleasure purposes.

It has been a commendable rule among the vehicle manufacturers that their claims for their machines have been, for the most part, modest. Thus, purchasers of electrics have in almost every case been treated to an agreeable surprise upon finding out, first-hand, their wonderful possibilities. The electrics not only do all that is promised of them, but in many cases much more.

The promises of a truly horseless age are fast coming true. Though it has well been said that the surface of the commercial field for electrics has, as yet, only been scratched, the time is already in sight when such will no longer be the case. The electric is coming into its own.

Some Recent Raymond Installations.

The C. W. Raymond Co., Dayton, Ohio, has been busy throughout the summer months filling many orders for clay plant equipment. A few of the orders recently received include an 18-section producer gas fired kiln, one six-track metallic radiation dryer, 90 style "F" dryer cars for L. A. De Laplante, Toronto, Canada; one 888 brick machine and a heavy duty pug mill for the Hocking Valley Products Co., Columbus, O.; a five-track metallic radiation dryer and 80 dryer cars for the Canton Pressed Brick Co., Canton, O.; brick machine for the Poston Paving Brick Co., Crawfordsville, Ind., and a brick machine, pug mill, rotary automatic cutter, a disintegrator and auxiliary outfit for the American Trading Co. of New York.

SAND LIME DEPARTMENT

GROWTH OF THE SAND-LIME INDUSTRY.

Pioneer Relates Story of Early Struggles—Tests Show Excellent Quality of Brick.

In a recent letter, G. W. Bostwick, manager of the Sacramento Sand Stone Brick Co., gives some interesting information relative to the development of the sand-lime industry. He was one of the first to engage in the business in this country, and watched its growth from the beginning, and has been through many stiff fights in his efforts to advance the sand-lime brick interests. Although competition has been strong in the West, he states that sand-lime brick, properly made, has proved its value and as a consequence the entire local atmosphere at Sacramento has been changed in regard to this product.

With a view of getting at the exact status of the industry and to determine whether there was anything wrong with properly made sand-lime brick, or if there were any reasons why such brick should not be used for facing the finest class of buildings and also to secure information as to the strength of its own brick in particular, the Sacramento Sandstone Brick Co. recently had its products tested by the Bureau of Standards of the United States, also by the State University of California at Berkeley, and by the State Engineering Department of California, the highest authorities in the country. To ascertain the opinion of past users of the brick, fully one hundred and fifty letters were sent out all over the United States, to Canada, Germany, and France, asking for expressions as to the appearance of sand-lime brick buildings that have been erected for several years, also as to wearing qualities, effect of moisture, frost, fire, etc. Over one hundred direct answers were received, all of which speak in the highest terms of sand-lime brick and its wearing qualities. These letters are from architects, contractors, owners, state institutions, the United States Government, and several from the largest corporations in the country.

Splendid Building of the Southern Pacific Hospital, San Francisco, Cal., Constructed of Sand-lime Brick Made by the Sacramento Sandstone Brick Co.

The Government tests show that the brick pass the specifications for New York City by wide margins, and the California University tests show up even better than those of the Government; both of these reports were considered by the State Engineering Department in connection with other personally conducted tests, and as a result the brick manufactured by the Sacramento Company are today endorsed, and passed upon, by the highest authorities and the best engineers throughout the country and every Sacramento architect has personally endorsed the brick by a written letter over his own signature.

The Chamber of Commerce of Sacramento instructed the manufacturing committee to investigate the product of the Sacramento company, and adopted the favorable report rendered, recommending the brick to the public.

The Sacramento company manufactures facing brick exclusively, and as a direct result of the fine showing made has recently booked orders for approximately one million brick. The above illustration shows the handsome effect these brick make when laid up.

TEST PROVES DECK SWEEPER'S EFFICIENCY.

California Brick Plant Takes Power and Maintenance Observations of Williams Wet Clay Grinder.

For several years the Williams Patent Crusher & Pulverizer Co. has been calling attention to its deck sweeper grinders for handling clay and shale as they come from the bank, regardless of the amount of moisture. It has been successful in selling a great many of these machines to brick plants, where the brick maker was somewhat distracted on account of the difficulty in handling his clay.

Several instances are known where the clay contained a great deal of stone, and also was so moist at times that the brickmaker could not successfully handle it. This condition has even led some brickmakers to think they would be obliged to move their machinery and plants to other points where suitable clay could be secured. Fortunately, however, these gentlemen came in contact with the Williams advertisements in "Brick and Clay Record," and the Williams people succeeded in selling them. In three cases the brickmakers have been assisted in making a successful brick and tile of clay which they previously believed could not be handled.

The machine in question, the deck sweeper, is especially designed to take the ordinary wet, damp, or dry clay and shale, as it comes from the bank, at all seasons of the year, and grind it to a suitable size for brick-making. The Williams Co. has ground some clay and soft shale so wet it was difficult and almost impossible at some seasons of the year for the brickmaker to elevate or convey it.

Twenty-five deck sweeper machines have been installed in brick plants all over the country, and in all of these 25 machines, there has not been one bad one, every machine doing its work according to the guarantee. Every one has been paid for, and, in almost every case, the company has received unsolicited testimonial letters testifying to the good points of the machine.

The Williams people have from time to time called attention in special page-display advertisements in this magazine to the various testimonial letters received from the brickmakers using these machines, all of which can be found by reference to the back numbers of "Brick and Clay Record." A great majority of these testimonials stated that the machines were eminently satisfactory, were doing the work in excellent shape, and grinding the clay at all seasons of the year, regardless of the clay's condition.

In the plant of the Carquinez Brick & Tile Co., of Port Costa, Calif., the company has been running one of the large No. 8 Williams deck sweepers for two years. This machine will handle from 100,000 to 150,000 brick per day. A representative of a well known brick machinery concern, in talking to the superintendent of this plant some months ago, censured him for installing this large Willams machine, as he claimed it would take too much power and cost too much for maintenance to operate. About this time the Carquinez plant changed its installation to electrical power, so that it could meter each machine, and arrive at the exact horse power. The comparison was made between the Williams deck sweeper grinder and another method of pulverizing. The other method took 22.3 k. w. per thousand brick per hour, so the report shows, and the Williams crusher only 5.5 k.w. per thousand brick per hour.

The letter reproduced also deals with maintenance, which is another very important item to the brick maker. The maintenance was figured over a period of two years, and by the other method amounted to 5c per thousand brick, figuring one man to operate the pan. On the Williams grinder the maintenance was 3.6c per thousand.

IN THE REALMS OF PUBLICITY.

In a new 50-page catalog just issued by the Pulsometer Steam Pump Co., of New York City, the entire field of operation and the different engineering features of the pulsometer are fully discussed. The catalog gives figures and curves showing the steam consumption and the cost of operating a pulsometer under different conditions and shows how it compares with other types of pumps. Many novel applications of the pulsometer which are not so widely known, are taken up and discussed, such as its use for pumping chemicals, for handling sewage, pulp and stuff in paper mills, for hydraulic filling, pumping out coffer dams, etc. The catalog contains over 35 illustrations, showing how these different applications have been worked out in practice. On the whole, the various engineering features in connection with the operation, maintenance, cost, etc., of the pulsometer, are more fully discussed in this catalog than has ever been done before. Tables of the friction loss of water in pipes and other constants of use to engineers, interested in pumping problems, are included. Copies of this publication may be had by addressing the Pulsometer Steam Pump Co., 17 Battery Place, New York.

A booklet, recently issued by the Mesta Machine Co., Pittsburgh, Pa., gives a brief description of the company's plant and product. The works, situated at West Hempstead, Pa., is devoted to the manufacture of gas and steam engines, condensers, steam hydraulic forging and bending presses, steel gears, etc. The illustrations in the booklet are above the ordinary and to those interested, it is well worth filing away. Those desiring copies may secure them by addressing the company at its Pittsburgh office.

"ADS THAT SELL BRICK."

In the modern publicity work which most brickmakers feel called upon to carry on, the busy man is often sore perplexed in his efforts to prepare attractive ads. The writing of ads is a profession in itself, and it is not to be wondered at that the clay man cannot, on a moment's notice, frame up a suitable ad. To fill a needed want in this direction, the Clay Products Advertising Co., 445 Plymouth Court, Chicago, has at considerable expense, gotten out a book containing several dozen attractive ads, telling of the merits of burned clay products in a manner calculated to attract the attention of anyone interested in building. In addition to the ads, a number of attractive reading articles to accompany same are supplied. Two copies of the book are furnished, one to be used as "copy" for the newspaper and the other to be kept for reference. The cost of this book is extremely low, being $5.00, which is less than it would cost to have one ad written by an expert ad writer.

If you are planning an advertising campaign, you cannot do better than to invest $5.00 in a set of these books. Your profits on the first order will more than pay for the outlay.

Farmers to Hear About Drainage.

We are informed that there will be a gathering of farmers and farm land owners in Cairo, Ill., some time in November, at which meeting there will be interesting lectures on farm topics, delivered by experts, including a talk on "Tile Drainage." It is understood that the State of Illinois will pay the speakers and the best that money can procure will be engaged. This shows what the farmer of today is doing to keep up with the times.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

F. W. Bryson, who has been in the employ of the Ohio Mining & Mfg. Co., Shawnee, Ohio, ever since its plant was started seventeen years ago, and for the past seven years, acted as superintendent of the plant, has accepted the position of general manager of the Mexico Brick & Fire Clay Co., Mexico, Mo.

John Russell, one of Toronto's pioneer brick makers, died last week. The deceased was born in County Monaghan, Ireland, in 1837, and went to Toronto in 1849. He founded the brick works which are now operated by his son, Mr. Joseph Russell.

Frederick A. Leary, formerly connected with the Brick Co. of Pecowsic, Mass., died Sept. 5th at the age of 53.

The clay business of Henry county, Tenn., continues to be very active. The Johnson Porter Clay Co., which perhaps mines more than any other clay company in Henry county, has just leased the H. A. Winsett tract of land near its mines at Henry. The lease is to extend over a period of 25 years. According to the terms of the lease, a royalty of 10 cents per ton will be paid the owner of this clay.

The Ragland (Ala.) Brick Co. is remodeling and enlarging its plant and will increase its output of brick, which is meeting with a good demand.

The Des Moines Clay Mfg. Co. recently closed a contract to furnish its impervious face brick for the new Baptist Church to be erected at Broken Bow, Neb. It is said this contract was given after the building committee had spent several months in investigating facing materials.

The Dalton Bros. Brick Co., Hopkinsville, Ky., is having a busy season. It has recently filled several contracts, including the brick for the McLean college and for the four-story Penny Royal building at Hopkinsville.

Henry J. Thompson, vice-president of the New Jersey Brick Co., New York City, died suddenly Sept. 18, in England, where he had gone for his health.

The directors of the Rapid City Brick & Tile Co., of Trezwell, Tenn., has elected the following officers: A. S. Warren., Jr,, president, Nashville; Capt. W. J. Hackett, vice-president, Nashville; W. M. Shipman, general manager and secretary, Trezwell; Pitt Henslee, treasurer, Dickson. The authorized capital of the company is $30,000.

Mayor Bruch of Hazleton, Pa., has signed the resolution, recently adopted by the councils, which authorizes the change from copper to terra cotta on the tower of the new City Hall. The change, it is said, will make a big difference in the appearance of the building and will conform more to the general style of the architecture.

The commissioners of Miami county, O., recently awarded the contract for furnishing the tile for the Armstrong ditch in Concord township, to the Troy Tile & Brick Co., Troy, O.

Work has been begun on the construction of a building, 497 feet long and 83 feet wide, in which are to be built twenty kilns for the Trenton Fire Clay & Porcelain Co. at Trenton, N. J. A large moulding building, 298 x 50 feet, will also be erected. It will be of brick, five stories high. The improvements planned by the company, it is reported, will cost in the neighborhood of a million dollars. There will be three workshops and kilns erected between the kiln buildings and the moulding building. These, however, will not be built until next year.

The entire plant and properties of the Gulf States Brick Co. at Beaumont, Texas, were purchased by Newton R. Wilson at receiver's sale for $2,500, his being the only bid submitted.

H. E. Buck, proprietor of the H. E. Buck Brick Mfg. Co., manufacturer of brick, drain tile and building material at Lake Charles, La., was a recent caller at our office. He states that business throughout the South is in a prosperous condition and that in the general awakening which is taking place there, much clay products are being used in the construction of business houses, factories and dwellings. His plant produces about three million common brick annually, about one-half of which is sold to local trade and the other half is shipped to surrounding towns, within a radius of one hundred miles. Mr. Buck, who has been engaged in the brick business in the South for eighteen years, was brought up at Morris, Ill., where his father, John Buck, established the first brick and tile plant in Grundy county, 35 years ago. Since his father's death, the plant has been operated by a son, John Buck. While in our city, Mr. Buck made a point of visiting a number of up-to-date plants and was much interested in the Chicago way of making brick.

The Pfannmueller Engineering Co., announces that it will move its general offices from its machine shop and workhouse at 3701-7 South Ashland avenue to Suite 1733 First National Bank building, Chicago.

The making of pottery by the inmates of a sanitarium at Marblehead, Mass., is an innovation in the treatment of the sick, introduced by Dr. Hall, and is part of a self-supporting method which is restoring invalids to health and usefulness. The pottery is made in a tent so the patient may work and take the "fresh air" treatment also.

Boston's newest theatre, the Huntington Avenue, is an interesting fireproof structure in which some 7,000 feet of terra cotta were used. The building was constructed within the four walls of another structure, in which business was carried on without interruption.

The Vogle Clay Products Company has all but completed its big new plant about two miles southwest of Weir, Kansas, and will be turning out ware very soon. The plant was promoted and built by Louis Vogle, who is from the East, and Neal Allen, of Pittsburg. They have an excellent quality of clay and will make brick and tile.

The Humboldt (Kan.) Brick Manufacturing Co. is increasing its well established trade throughout the country on its several lines of reliable products, such as face brick, common brick, vitrified paving brick, farm drain tile, hollow brick, hollow building tile and fireproofing.

The Sapulpa (Okla.) brick plant will soon begin to operate its plant with a full force of men. Sufficient orders have already been booked to keep the plant running for some time.

Alexander Jackson just returned from Toronto where he installed a new Trautwein drier for the Weston Brick Co., of Weston, Canada.

W. H. McCarthy is again back in the fire brick and fireproofing business as sales agent, and has opened offices at Suite 405, Chamber of Commerce Building, Chicago. Mr. McCarthy sold out his interests in a similar business last spring and went into another line, but is returning to his old love.

A fire on Sept. 8th damaged the works of the New Jersey Terra Cotta Co., Perth Amboy, N. J., to the extent of about $40,000. It is stated that plans are under way for the erection of new modern factory buildings which will be even better than the former ones.

The Athens Pottery Co., Athens, Tex., has filed a certificate of dissolution.

The Blackwell Gas & Oil Co., Blackwell, Okla., through the Industrial Committee of the Commercial club has interested some practical brick men in the idle brick plant there and the shale on the Carson farm is being tested with a view of making paving brick.

J. R. French, general manager, La Compania, Mexicana de Tubos de Albanal, 2 a. San Juan de Letran, No. 19, Mexico City, Mexico, writes he was especially interested in the article "Sanitary Pottery Plants Show Boom," in Sept. 1, "Brick and Clay Record," and would appreciate catalogues from the manufacturers of this class of clay products.

The Northwestern Clay Mfg. Co., of Richland Center, Ill., which recently increased its capital from $150,000 to $650,000 has opened an office on the seventh floor of the Putnam building, Davenport, Ia. The plant of this company is at New Windsor, Ill.

NEW PLANTS AND ADDITIONS.

The Swift Terra Cotta Brick & Tile Co.'s plant, located near Ottawa, Ill., was destroyed by fire, Sept. 16, causing a loss of $25,000. Insurance, about $5,000. It is understood it will be rebuilt.

The Spanish Mission Tile Co. has been incorporated at Los Angeles, Calif., with a capital stock of $100,000. The incorporators are H. W. Hellyar, E. H. Cochran, and Henry Waggoner.

The Meacham & Wright Brick Co. has been incorporated at Chicago, Ill., with a capital stock of $50,000 for the purpose of carrying on a general contracting and selling business. The incorporators are John R. Montgomery, Jasperson Smith and Louis E. Hart.

The National Co. has been incorporated at Ijamsville, Md., with a capital stock of $100,000 to manufacture brick.

Articles of incorporation have been filed by the New Mexico Fire Brick Co., which is capitalized at $50,000, divided in 500 shares of $100.00 each. R. C. Garrett, who will have charge of the company's office at Gallup, New Mexico, has had twenty-five years' experience in making fire brick. It is said this will be the only plant of its kind in New Mexico, although there is quite a demand there for fire brick. The stockholders are I. Sparks, R. C. Garrett, and J. H. Vaughn.

A charter has been granted to the Yankton Pressed Brick Co., Yankton, S. D. The commercial club of Yankton has donated the site, and the plant, which is valued at $70,000, will be moved from Hot Springs to the new location. The directors of the company are D. B. Guerney, W. J. Fantle and W. C. Lusk, of Yankton; D. Y. Johnson, of Omaha; and F. H. Perry of Hot Springs. It is the purpose to manufacture brick of a high quality and it is expected that the territory surrounding Yankton will take all the plant will be able to turn out.

The Black Hawk Clay Manufacturing Co., Sears, Ill.; capital stock increased from $100,000 to $400,000.

The new owner of the plant of the Cambria Clay Mfg. Co., Altoona, Pa., is planning many improvements to the property.

F. L. Capers of the Standard Fire Brick Co., of Pueblo, Colo., writes that he expects to install complete electric drive, taking his current direct from the local street car company.

Bugenhagen & Turnbull, architects, in the Willoughby-Summer building, Saskatoon, Sask., Canada, are promoting a brick plant proposition.

Aug. Zorn has purchased from Mrs. Tilbury, a tract of 22 acres of land, located northeast of Delavan, Ill. The deal includes the land and improvements and the Tilbury plant but not the machinery.

The Binghamton Paving Block Co., of Binghamton, N. Y., has been organized by Lloyd I. Foster, Chas. E. Foster and Geo. M. Foster, for the purpose of manufacturing brick, terra cotta and paving block.

The Medora Shale Brick Co., at Medora, Ind., has increased its capital stock from $30,000 to $65,000.

The Paducah Clay Products Co., capitalized at $250,000, has purchased 400 acres of land near Paducah, Ky., and it is reported will establish a large pottery there. The incorporators are H. F. Pryor, Thos. L. Walker and L. Traliot.

The Maryland Fire Brick Co. has been incorporated at Harwood, Md., with a capital stock of $300,000 to build a brick plant.

The property of the Champion Brick Works of Wallsville, O., is now owned by the Bankers Surety Co., of Pittsburgh, which company bought it at a court sale for $10,350. The new owners expect to make many necessary repairs and improvements and place the plant in operation in the near future.

The Hardstone Pottery Co. has been incorporated at Cincinnati, O., for the manufacture of sanitary earthenware. The capital is $25,000 and the incorporators are C. W. Metz, W. F. Wynn, L. H. Merling, G. W. Coppin and R. Mitchell.

The Wilson Coal & Clay Co., of Indian Springs, Ind., has been incorporated with a capital stock of $10,000. The directors are Daniel Wilson, Philipsburg, Pa., Alex. Dunsmore, Curwensville, Pa., Adam Wilson, Morris Run, Pa., Agnes Wilson, Blossburg, Pa., and Adam D. Wilson, Philipsburg, Pa.

The New York Architectural Terra Cotta Co. 225 5th Ave., New York City, will enlarge its plant at Vernon Ave. and Harris St., Island City, by the erection of a brick addition to cost $12,000.

The Mahoning & Lake Erie Coal Co. has absorbed the American Fire Clay Co., both companies doing business chiefly in Mahoning county Ohio, but controlled by Cleveland men. The Mahoning and Lake Erie Coal Co. has increased its capital stock from $100,000 to $250,000 to take care of the merger. Britton F. Day, of Cleveland, is president of the new company and J. E. Epsom, also of Cleveland, is vice president.

A company composed of W. B. Hostetler, E. E. Weaver, J. M. Hostetler, J. F. Zahner and Amra Hostetler is soon to erect a brick and tile factory at Sugar Creek, O., where the company has purchased seventeen acres of land. A coal mine will be opened at once and the buildings will probably be erected this fall and machinery installed during the winter.

The Advance Terra Cotta Co., of Clearing, Ill., has been organized with a capital stock of $500,000 by Walter B. Rix, Stanley K. Gage and G. A. Johnson.

Application will be made October 7th for a charter for the Clearfield Sewer Pipe Co., Clearfield, Pa.

The Lemmon Brick & Tile Co., of Lemmon, S. D., has been organized with a capital of $200,000 to engage in the manufacture of brick, tile, hollow block and other clay products. O. S. Quammen, G. E. Lemmon and other business men of Lemmon are interested, also A. G. Brennick of Mason City, Ia.

The Newark China Clay Company, has been incorporated at Mt. Holly Springs, Pa., with a capital of $100,000.

The Alliance Company, a Western concern in the pottery trade, was incorporated recently at Trenton, N. J. Capital stock is $100,000 and $3,000 of it is held nominally by Kenneth H. Lanning, Walter L. Cox, Jr., and William G. Hopper, of Trenton.

F. A. Harris, 1216 Dallas St., Waco, Tex., writes he will be in the market shortly for brick machinery. He subscribed for "Brick and Clay Record" to see the machinery advertising.

S. L. Davidson, A. R. Robertson and C. E. Hickman, St. Paul capitalists, it is said, are contemplating the establishment of a brick plant, at Valley City, N. Dak. The clay has been found suitable and as the nearest brick plant is 150 miles away, the proposition looks favorable.

Work has been begun at St. Marys, Pa., on a new brick plant which will employ about 60 hands when completed. The Pennsylvania Fireproofing Co. of Erie is at the head of the project.

The Brazil Collieries Co. has been organized at Brazil, Ind., with a capital stock of $10,000, by A. H. Allais, Edward Allais, Wm. Zellers and Charles H. Zenor for the mining of coal and clay.

Miguel Angel Madrigal of Amargura No. 18, Havana, Cuba, is considering purchasing the necessary equipment for a laboratory for the testing of clays.

NEW YORK.

New York, Sept. 23.—With a fair demand for common building brick for immediate use, with very few stacked for winter and early spring requirements, and with every indication pointing to a strong market in the near future, it can hardly be expected that prices will remain at $6.75 to $7.00 much longer. The end of the brickmaking season is in sight, when manufacturers will not be so anxious to ship to make room for late brick and it therefore seems that the bear raid conducted with indifferent success by the dealers in this market during the last season, must soon come to an end.

As for the dealers they cannot delay putting in their stocks more than two weeks longer and the manufacturers expect that by the end of the first week in October, they will be feeling the full pulse of a most dubious market. When buying becomes active, it would not be surprising to the distributors to find the manufacturers insisting upon a sharp rise over present quotations irrespective of the customary winter covering charges.

Front brick have experienced some dullness of late. This is due in part to an increasing competition, resulting from a falling off in the number of operations, plans for which have been filed, but actual construction on which has been temporarily postponed, probably until the results of the general election in November can be reflected in general trade conditions. This, of course, has caused the consuming market to shrink, and with so many front brick interests in the field, it is small wonder that some of the manufacturers have been compelled to force the market.

Front brick is a commodity very unlike that of common brick, in that it is shipped into this market on spot orders for immediate delivery. In other words, it is seldom stacked on call and when the market falls off in demand, prices are also likely to weaken. That is the tendency at this time, but the trend is generally believed to be only temporary because there is a vast amount of construction work in this market that will go ahead later in the year.

The eastern brick market is nervous and the question of car shortage is a serious one, as far as immediate shipments are concerned, while the rapid approach of winter and the prospects of further delay due to the differences between the teamsters and excavators, which, however, are now under arbitration, make for unrest, especially among moderate operators who have not the capital to risk delay in getting shipments to hand promptly or by a tie-up of work on the job by labor differences. As for commons, especially Hudson rivers, the nervousness undoubtedly centers in the tenor of the decision Magistrate Freschi will hand down in the hearings regarding the legal status of the Greater New York Brick Co.

It was generally believed that the decision would be forthcoming on or about the middle of this month, but owing to the absence from town of witnesses and the incorporation into the records of testimony of certain statistics and reports, Assistant District Attorney Ellison has not yet collected all his data. It is further reported that the Assistant District Attorney contemplates going over some, if not all of the evidence, with the Grand Jury, before passing his briefs on to the Magistrate for review and decision.

So it therefore is considered probable that this most important decision will not be handed down until after the yards have all closed for the winter, which probably will be as late as possible this year, for reasons stated a little later on. Dealers have begun to realize that they cannot hope to profit by the findings of the court on this case, and should, therefore, make provision for winter and spring brick before it is too late.

Shortage in Annual Output.

A conservative estimate of the total output of the Hudson river district this year puts it at 800,000,000. The whole state of New York turned out only 1,143,726,000 brick last year, of which probably 1,000,000,000 could be charged up to the Hudson river district. The season opened from two to three weeks late and from the start there has been a fearful shortage of labor so that the outputs have been reduced at least 25 per cent, and in some cases 50 per cent during the season. Some yards did not operate at all so that it is very probable that the available supply of north river brick is very far below that which the dealers figure.

Because of the inability of manufacturers to produce a normal quantity, it probably will be the endeavor of every producer to keep his yard open as late as weather conditions will permit, to ease the strain that now seems certain to fall upon the market along about February, March and April.

Had the dealers and certain consumers been able to carry their point this season, by going into the Raritan valley for brick whenever specifications permitted them to, the market today would have been surfeited and the shed reserves along both sides of the Hudson would have been seriously depleted, with little money in the bank to show for it.

There have been times during the last month or two when distributors here have been the storm center of indignant producers who have insisted that if their brick did not go out readily at the $6.75 level, that lower prices be accepted so as to untie their boats at dock here. Distributors have been between two fires all year, the bear dealers and bear manufacturers on the one hand and bull manufacturers and a market that was bound to strengthen sooner or later, on the other.

The terra cotta department has been very active. Some companies have extended their earliest guaranteed delivery date to March first, while many others are unable to take anything that will require delivery prior to February 1. The prices current are moderate, the tendency being to keep them down until after December first when, if the demand continues as great as it is at present, a general upward movement may be expected to follow.

Sept. 25.—Price of Hudson River and Raritan Commons have advanced twenty-five cents, making quotations $6.75 to $7.25 with few takers.

CANADA.

Another new brick manufacturing plant will be established in Calgary, by the Idaho Brick & Lime Co., of Spokane. The plant, as at present contemplated, will cost about $75,000 to install, and when in operation will have an output of 100,000 brick per day. The plant at first will be operated for the manufacture of building brick only, but later will manufacture sewer pipe. It is expected the plant will be in full operation by the end of September. The new company will be known as Brick & Supplies, Limited, the manager and president being Mr. J. H. Evans.

The Tregillus Clay Products Co., organized a short while ago, has purchased the plant of the Calgary Terra Cotta Co., together with its valuable deposits of shale lands west of Calgary. The plants are at present turning out about 25,000 brick per day, but will be enlarged immediately. One of the three plants will be remodeled for the manufacture of terra cotta hollow tile and all will be in operation throughout the winter.

Pressed brick and all kinds of tile products will be manufactured by a company known as the Mount McKay Pressed Brick Co., which has recently been organized at Fort William, Ont. The installation of the first unit and the preparation of the ground for commencing work, will involve an expenditure of between $150,000 and $200,000. An order for the machinery has been placed with the Berg Machinery Mfg. Co., of Toronto, which makes a specialty of dry press machines.

The Union Brick Co. has been formed at Toronto and will build an up-to-date plant with output of 100,000 brick a day at Streetsville. Directors are: J. W. Monk, 548 Markham St.; E. C. Hill, 43 Victoria St.; A. F. Webster, 308 Russell Hill Drive; David Carlisle, 72 Winchester St.; G. P. McGann, all of Toronto, and J. W. Reynolds, Cleveland, Ohio.

The Neepawa, Man., Register states that there is a splendid opening for a brick yard in that town.

Permits for building issued at Edmonton, Alta., in August involved $1,217,275, as against $611,440 for the same month in 1911, bringing the total for the first eight months this year to $10,250,000, as compared with $3,672,260 for the whole of 1911. Contractors and builders estimate that the total expenditure this year will be between $13,000,000 and $14,000,000, with every indication of passing the $15,000,000 mark in 1913. The greatest handicap this year is the shortage of skilled workmen and building materials. The railroads are not able to handle the freight of the western provinces with even a semblance of dispatch.

The City Commissioners of Edmonton, Alta, are having plans and estimates prepared for a library building to cost $120,000. Andrew Carnegie has offered to contribute $60,000 toward the building and equipment, the latter item being figured at $20,000. Arthur G. Harrison, a member of the board, has charge of the details.

A three-story brick building, costing $55,000 is being built for the Northern Hardware Co., at Edmonton, Alta. The feature of this construction is that it was built around and over the old store without interfering with the business. Considerable glazed buff brick and ornamental tile will be used in the building.

The Swift Canadian Co., owning an abattoir and packing house at Edmonton, Alta., has bought a site, 50 by 140 feet, where it will erect a five-story warehouse faced with brick at an estimated cost of $60,000.

The Hardstone Brick Co., of Edmonton, Alta., is installing machines to give the plant a daily capacity of 60,000 brick. The factory will be operated by electricity, supplied by the municipality. The first output will be used by the company in completing its own building.

PENNSYLVANIA.

Pittsburgh, Pa., Sept. 26.—Tests of a far-reaching character are contemplated in the building material line by the Pittsburgh station of the United States Bureau of Standards—on lines that were followed here a fortnight or so ago when a most severe test was made of a 4 x 4 x 12 solid brick column.

Fireproofing materials will next occupy the attention of the Bureau of Standards. While it took a remarkable pressure—6,580,000 pounds—to crack the above mentioned brick column, hope is entertained that a greater pressure might be required to "crack" columns in other tests that will later be arranged.

While there is no definite information obtainable at this writing, a feeling is cropping out on the surface that an effort may be made within a very short time to bring the next annual meeting of the clay associations to Pittsburgh. Some local brick manufacturers are not committing themselves, but it has been learned by the representative of "Brick and Clay Record" that an under current is at work to take the conventions to some point other than Chicago. The executive committee of the N. B. M. A. will meet soon to discuss the next annual gathering, and there is reason for believing that "Pittsburgh will be mentioned," notwithstanding the fact that the members of the last convention voted unanimously in favor of holding the 1913 convention in Chicago.

Owing to the fact that the Ceramic Department of the United States Bureau of Standards is located here, an opportunity is declared to be afforded the manufacturers to have some practical demonstrations planned that are not possible to be had elsewhere. The Ft. Pitt Hotel has been enlarged since the last convention here and there are over 1,000 rooms now in this place. It was at the Ft. Pitt where the convention was held three years ago.

Daniel Kough and C. B. Cook of Windber, Pa., east of here, have placed in operation the Kelley brick plant, which has been idle about two years. The plant was sold recently at sheriff's sale, to William H. Sunshine of Johnstown, Pa., and it has been leased by the present operators. Building and common brick are to be made, and later, it is planned to make pavers. The capacity of the plant is about 25,000 per day.

Selling agents, in the Pittsburgh district, have been advised that the plant of the New Jersey Terra Cotta Co., at Perth Amboy, N. J., was recently damaged by fire. As soon as repairs are completed, operations will be resumed.

An application will be made at Harrisburg, Pa., Oct. 7 for a charter for the Clearfield Sewer Pipe Co., the main offices of which will be at Clearfield, Pa.

After making an inspection of the grounds and plant at Wilmore, Pa., in Cambria county, the new owners of the plant, of the Cambria Clay Manufacturing Co., of Altoona, Pa., have agreed to greatly improve it at once. Details anent new installations have not been announced.

Sherman Ford, manager of the National Fire Proofing Co., of this city has just issued the sixth edition of their booklet entitled "Fireproof Houses of Natco Hollow Tile and How to Build Them." The booklet is fully illustrated and a large amount of valuable information is contained therein.

A shortage of freight cars throughout the country, according to report current among manufacturers and builders here, is interfering with construction work in various localities.

Brick manufacturers are interested in the formation of the Gilmore Tunnel & Power Co., of Pittsburgh, which has been formed by W. A. McCutcheon and R. B. Little, both of Pittsburgh and Edgar C. R. Ross, of Ridgeway, Pa. The capital stock of the company is placed at $250,000 and in due season the company will likely place a large order for brick for tunnel purposes.

While there is more or less activity noted in the brick market in the Pittsburgh district, the manufacturers declare they are in a position to take care of a still larger volume of business. Fire brick is in good demand, and all along the line prices are being pretty well maintained. Selling agents report the following eastern price list:

	—Per	1,000—	
Front, buffs, No. 1	28.00	@	32.00
Grays, shaded and speckled	32.00	@	..
White, No. 1	32.00	@	..
Hudson River, common	6.75	@	7.00
Light, hard	5.75	@	6.00
Pale	4.00	@	4.75
Jersey, fire, No. 1	25.00	@	..
No. 2	20.00	@	..
Penn., fire, No. 1	30.00	@	..
No. 2	25.00	@	..
Scotch	35.00	@	..

From Wilkes-Barre, Pa., comes this story which will be read with interest by those concerned in the manufacturing of bricks and who do business with county and municipal officials:

"T. A. Parry, agent for the Armstrong Cork Brick Company, appeared before John J. Moore, William Brenton and J. Todd Walsh, Luzerne County Commissioners, and denied that he had offered any graft to County Commissioner Frederick Lenhart, of Columbia county, or that he had ever said that the Luzerne county officials were 'fixed.'

"Upon receiving this news, the County Commissioners called upon their solicitor, W. S. McLean, Jr., and directed him to proceed against Lenhart in a criminal action.

"Lenhart has issued a public statement in which he charges that Parry offered him $3.50 per thousand brick as graft and told him that the Luzerne officials were to receive $2.50 per thousand as graft money. He gives detailed interviews, saying that in the endeavor to locate the graft he came to the Philadelphia office of the Armstrong Brick Company, seeing Messrs. Divesy, Parry and Nelly. He adds:

"'I will furnish the grand jury and District attorney with an affidavit that the above statement is true in detail, and I will also furnish them with other information that I have at the September sessions of court, and place the matter in their hands for investigation.'"

The National Fire Proofing stocks have advanced on the reports that a large acreage owned by the company in Ohio has been given an enhanced present, and prospective value through recent oil developments in the vicinity of that property.

The company acquired 3,000 acres of land in southern Ohio some years ago. Oil wells have been brought in all around this property in the recent past. It is understood that various oil interests have endeavored to secure leases from the Fire Proofing Company, but that the latter has turned down all such proposals. If the property is to be developed for oil the company itself will develop it. It is not improbable that it will sink one or more test wells with this purpose in view.

The shale brick plant at Royalton, Pa., which is owned by B. Dawson Coleman is about ready to be placed in operation. The first of the five bee-hive kilns has been completed and work on the remainder has been commenced. When the machinery was placed in operation, 9,000 brick were made the first day, and these will be used in "home" plant construction. When in full operation, the company will employ between 75 and 100 workmen.

Operations have been resumed at the plant of the Columbia Tile Co., at Grafton, W. Va., which has been idle for some time.

Notice has been issued by the Secretary of State at Harrisburg, Pa., that the capital stock of the Nanticoke Brick Co., has been increased to $20,000.

ROCHESTER, N. Y.

Rochester, N. Y., Sept. 22.—Rochester is one of the most progressive and up-to-date industrial centers in the state of New York. There has been a lot of building going on here this year and some large projects are expected to go ahead. As a manufacturing center it has become famous in certain lines and is branching out, taking in other lines. Situated on the Genesee River and the Erie Canal, with good railroad transportation, the facilities for handling freight are good. It is near Lake Ontario, but it is not a lake port. The Genesee Falls have been harnessed, most of the factories using electric power from these falls. Considerable power is also delivered here from Niagara Falls. A city of 250,000 population, it is rapidly forging ahead and ranks as one of the important municipalities of the country.

Among the large building projects going ahead here is the New York Central station, which is to cost one million dollars. A large quantity of face and common brick will be used in its construction. The mayor has recommended the construction of school buildings during the next four years, at a cost of $1,000,000.

The brick plants here do a large and a profitable business and have first class equipment. Common brick sell at $7.50 to $8.00. Large quantities of higher grades of brick are made here, also considerable sewer pipe, fire proofing hollow tile, etc.

There were, formerly, three firms engaged in making sewer pipe, but they have been merged into one company. Prices have kept up pretty well, the plants have been busy, the local demand is good for brick and other clay products and business conditions in general have been better in this place than in many other cities. There is plenty of good clay around here and in the vicinity of this city may be found the finest clays in the state of New York for making sewer pipe.

Concrete in Bad Repute.

There has been much complaint in different sections as to concrete construction work. Sometimes the proportion of cement used was only one part in twelve, instead of one part to three or four as it should be to obtain a proper cement mixture. The fact that contractors do this kind of work has made people wary as to concrete construction. In New York city a short time ago twenty-nine houses in process of erection were declared by the building department unsafe, and the walls and foundations analyzed, were found to be very much lacking in strength and stability. These dishonest practices are bringing concrete construction work into disrepute and not only defrauding the owner or purchaser, but endangering the lives of innocent people.

The plant of the Maplewood Brick Co., at Maplewood, a suburb, is owned by the Hiram Sibley estate and makes common brick. The offices are in the Hiram Sibley building. The plant has practically been rebuilt, new machinery installed, a power house built, a Woolford continuous kiln being used and Martin machinery. The plant has a capacity of 35,000 brick a day. Considerable money has been spent on making this plant an up-to-date one. It is five miles out of the city and the great problem has been, how to make the haul to the city. The company owns 200 acres of clay lands. Most of the brick are used in Rochester. The trustees for the estate conduct the business. W. Fisher is the superintendent. William H. Rogers, who is manager of the Rochester Brick & Tile Co., also sells the product of the Maplewood Co. He is the first vice-president of the National Brick Manufacturers' Association.

The Rochester Brick & Tile Manufacturing Co., located in the Powers building, makes common brick, drain tile, hollow brick and fire proofing material, at its open yard plant at Brighton. This plant which has been running fifty-nine years, turns out from 8,000,000 to 10,000,000 brick per year, which sell at kiln for $7.50 per M. They are largely sold to local trade. The plant has nine kilns, one continuous, six up draft and two down draft, burning coal. Last year the supply of clay ran out and fifty-six more acres of clay lands were purchased. Property is getting so high in the vicinity, and building lots are being sold all around the plant, so that the plant is not expected to run many more years at its present location and the tract will probably be cut up into building lots.

A new Water street sewer is to be built to run to Lake Ontario, which will take all the sewerage now emptying into the Genesee River. It is seven miles to the lake and iron pipes will run seven more miles out into the lake, so the sewerage will be discharged far from the land. This project will take 4,000,000 brick.

The Burke Brick Co. buys and sells pressed brick, but has no plant at present.

The Flower City Brick Co., of 243 Powers building, is the selling agent for the Rochester Brick & Tile Co., the Rochester German Brick & Tile Co. and the Maplewood Brick Co.

The Standard Sewer Pipe Co.'s plant has been turned over to the New York Sewer Pipe Co., which has also taken over the plant of the Rochester Sewer Pipe Co.

Theodore H. Swan, of 446 Powers building, handles a great deal of facing brick, architectural terra cotta and fireproofing material. He is furnishing the face brick for the New York Central station, the price ranging from $10 to $20 per M. He is having a very good demand this year and looks after the better class of trade and has delivered 4,000,000 brick during the past three months.

The Rochester German Brick & Tile Co., of 279 South avenue, has had a very good season. It makes common brick, fireproofing and drain tile at its two plants. The one, on Genesee street, makes brick only, while the one on Brooks avenue makes brick, fireproofing and drain tile. The plants run from April 15th to January first. The brick is selling for $7.75 per 1,000. The two plants make 13,000,000 brick a year and generally 2,000,000 brick are carried over until the following spring. Fred Wolf, who was the foreman of the Genesee plant and was with this firm for twenty years, died a short time ago.

W. H. Gorsline has sold his interest in the Rochester Sewer Pipe Co., as well as in the "Rovaque" quarry tile business. He has been interested in the real estate line considerably, but expects to get back in the clay making business again.

The New York State Sewer Pipe Co., 806 Insurance building, has recently acquired the property of the Standard Sewer Pipe Co. and the Rochester Sewer Pipe Co., and is now capitalized at $200,000. It has two factories here devoted to the manufacture of sewer pipe, vitrified conduit and the well known "Rovaque" tile. The plant property consists of ten and one-half acres of land, and there are three yards for storing and showing the product.

This company has made a special effort to promote the use of sewer pipe for sanitary and storm sewers and on account of the quality of its products, has met with well merited success. There is an excellent market in the eastern states for vitrified conduit and owing to the location of its factory the company is in a position to serve the eastern trade promptly. It has orders for Greater New York city, aggregating 250 cars of sewer pipe, and has filled large orders for conduit for the cities of Rochester, Buffalo, Utica and other cities. The "Rovaque" tile is distributed to all parts of the United States and Robert Rossman & Co., of New York and Chicago, are the general agents, the plant being located on the New York Central Railroad and the Erie Canal.

The two plants of this concern are up-to-date and run the year around, being splendidly equipped with modern machinery. The output is 1,500 cars a year. The company owns 60 acres of clay beds at Maplewood, just out of Rochester. These deposits of clay are the only known ones suitable for sewer pipe manufacture in New York state. The excellent product of this company has an established reputation. The pipe and clay is burned to a heat of 2,200 degrees, there being no annoying lime in the clay. All the sales are made to the building materials dealers, as the company feels that many people wish to buy broken lots and the dealer is in a position to look after this business. Ralph H. Gorsline, the president of the company, is also the superintendent of both plants. J. E. Maher is treasurer and sales manager and has been with this concern for over twenty years.

The "Rovaque" tile, made by this company, is popular with the architects throughout the country and is handled by all the principal art tile dealers, who predict for it an excellent future. It comes in sizes 6x9 and 9x9, in variegated colors.

CHICAGO.

Chicago, Ill., September 29.—With the advent of fall the demand for clay products here continues strong. This year has been a remarkable one for the clay men in this section of the country. It has surpassed any previous year, and that is saying a great deal for a presidential year, which has always been considered an "off year." Politics, it seems, has ceased to cut a figure in business, much to the betterment of financial conditions.

The remarkable advance in the demand for clay products has been brought about by a number of causes. First, the clay operators here have been boosting their own game in a way that has had telling effect. The last clay show was a great awakener, and since then there has been nothing left undone that would advance the interests of the clay industry. There has been an awakening on the part of the public, due to this campaign of publicity, and more and more are pepole realizing how important it is to construct their buildings of materials that will withstand the ravages of the flames.

The extension of the fire limits in Chicago some time ago to a section covering thirty-five miles, has been a helpful factor also, and it has caused the people to see the importance of fireproof construction, even though their buildings are outside the fire limits. The result has been an unusual demand for burned clay products.

There has been a marked increase in the construction of homes and small flat buildings. Every one who can raise money to buy a lot wants to build, and the majority want brick and other clay building materials.

All of the brick and clay plants are busy. There was a slight falling off in the orders for a time, as is customary in the late summer, but the orders are increasing again, and there is a feeling that the present conditions will continue for several months yet. Good prices are prevailing for all kinds of commodities.

One of the most serious complaints heard now pertains to the shortage of cars. This complaint is more general than it was, and there is not likely to be much improvement until the grain crop is moved. One concern is moving its products in any kind of a car that can be secured, and while this is the first time in the history of the company that there has been a resort to this method of shipping, so long as the material can be moved, one should not complain.

Perhaps what might be considered the most attractive architectural terra cotta work thus far seen is being placed in the new twenty-story Lytton Building, at the corner of Jackson and State streets, by the Northwestern Terra Cotta Co. The upper portion of the building is of terra cotta in the same color as the base course of granite, and around the windows of the second and third floors is a section of fine gilded terra cotta, which adds very much to the attractive appearance of the structure.

Business with the prosperous organization, the Chicago Retort & Fire Brick Co., has continued active throughout the summer months, and there is a pleasing outlook for future business. The plant is being operated to capacity to take care of orders which are coming in as fast as they can be cared for.

Mr. Cormack, of the Wisconsin Lime & Cement Co., is so pleased with business conditions that he is smiling all the time, his only complaint being that of car shortage.

The Wm. E. Dee Clay Co. is much hampered in making shipments. Mr. Witack stated that it was practically impossible to make shipments with any degree of promptness, owing to the great scarcity of cars. Business is fine with the company, and it reports an active movement in every line of clay products it manufactures. The new hollow brick made by this company is sure to prove a winner.

Reports at the office of the S. S. Kimbell Brick Co. were of a pleasing character. There was a lot of fine orders on hand and every indication for a continued active demand for face brick this fall.

President Schlake, of the Illinois Brick Co., is very much gratified with the summer's business and states that there has been no let up in the demand for building brick. With all its plants in active operation the company has been able to store a fair amount of brick against any unavoidable shut downs. This has been a most gratifying year for all brick manufacturers in this section, and the Illinois company has had its share of the orders that were going around.

The Bonner & Marshall Co. continues to have a thriving business, and is pleased with the past and the outlook for the fall is as fine as could be hoped for.

Col. W. D. Gates, of the American Terra Cotta & Ceramic Co., has been very busy taking care of the orders for terra cotta in the past few months. There is a shortage of help at the office and this has resulted in keeping him pretty close to the job for some time. The demand has been good and there is much business in prospect for this wide-awake and enterprising concern.

ST. LOUIS, MO.

St. Louis, September 23.—Building operations for the month of August in St. Louis show an increase of nearly 3½ per cent over the business for August, 1911, as revealed by the permits issued by the building commissioner. The statements for the last month show that 474 permits were issued for new buildings to cost $1,539,850 and 300 permits for alterations and repairs on buildings to cost $132,101.

Warehouse permits were the most important last month. Six permits were issued for warehouses to cost $398,650. Permits were also issued for five factories and workshops to cost $175,500.

Contracts for the eight-story Sayman Building have been let. It will be of re-enforced concrete skeleton construction, faced with brick, and will be built for warehouse or manufacturing purposes.

Openings of bids on contracts for the erection of engine houses, machine shops and other mechanical plants for the Manufacturers' Railway on the South Side, at an estimated cost of $250,000, have been deferred. The buildings will be of steel and concrete skeleton construction. The outer walls will be of hard red brick with terra cotta trimmings. The ground on which the buildings will stand is filled land, and in order to procure the best foundation 500 piles will be driven to a depth of 25 feet.

A syndicate has been formed for the erection of a $200,000 office and bachelor apartment house. The architectural style of the building is to be Italian Renaissance, the lower portion being of cream-colored terra cotta, ornamented with bas relief panels, the four upper stories are to be of cream colored brick, lighter in shade than the terra cotta, laid in Flemish bond with cement mortar.

PACIFIC NORTHWEST.

Portland, Ore., Sept. 25.—The open yards in this section have had a very bad season owing to the unusually rainy weather which prevailed throughout the summer months. It has been next to impossible to dry clay products in the open this summer for any length of time, and consequently the open or summer yards have not been doing a rushing business. The prices have been very low and the demand for brick has been light. The building construction in Portland has been about the same as last month and the prospects for a good fall trade are good.

Dr. R. C. Kelsey, mayor of Gold Hill, Oregon, has a unique proposition. While excavating for a large building he is to erect he uncovered a large deposit of clay. He now intends to use this clay and manufacture the brick which he will need in erecting his building, which he formerly intended to build of wood. He will employ an experienced brickmaker until he and his sons are initiated into the mysteries of the brick manufacturing business. He is figuring on using second-hand machinery. Samples of this clay have been burned and excellent brick have been produced.

Kaolin has been found in large quantities about ten miles northeast of Ashland, Ore. The Santa Cruz Portland Cement Co. discovered the deposit while prospecting for cement clay. The tests made show that this material will make fine white cement, but so far no tests have been made as to its adaptability for this material in manufacturing clay products.

Still another large deposit of clay has been found near Bay City, Ore. Samples have been tested in Portland and were found to be excellent for sewer pipe purposes. Borings have been made on the property, which show a deposit of a quarter of a mile square. Efforts are now being made to organize a company to utilize this valuable deposit.

John Cheschem, of Springfield, Ore., started his new plant last week. This plant is located south of the city limits. The motive power is electricity and the plant capacity will be 20,000 soft mud brick per day.

The Granger Brick & Tile Co., of Toppenish, Wash., is making arrangements to enter into the drain tile business on a large scale. New machinery and dry sheds are to be installed to handle this increase in the business.

A large deposit of Fuller's Earth has been found near Ellensburg, Wash. A. D. Hughes has discovered it and is making arrangements to work same.

TEXAS.

Austin, Texas, Sept. 27.—Reports from eight of the largest cities of Texas show that the aggregate value of new buildings for which permits were issued during the month of August was $2,361,200, which was an increase of $722,574 over the preceding month. The permits by cities during that month were as follows: Dallas, $623,098; Houston, $511,228; Galveston, $536,700; San Antonio, $322,944; Austin, $167,080; Fort Worth, $117,210; El Paso, $73,000; Beaumont, $10,940; Total, $2,361,200.

With every indication that the cotton crop this year will be a record breaking one and with a continuation of good prices there are good grounds for the general optimistic feeling that now exists in business and industrial circles throughout the state. All lines of building trades are already feeling the benefit of the many millions of dollars of money which the sale of the cotton crop is bringing to the farmers of Texas. Naturally a considerable part of the money derived from the crop finds its way into building improvements, and the placing in circulation of this money, leads directly to the erection of many new buildings. Besides a probable total production of approximately 4,900,000 bales of cotton this year, the yields of other crops such as wheat, corn, oats, fruits and vegetables have exceeded those of any previous year. Never in the history of Texas have the farmers and people generally been more prosperous than now and as a result the bank deposits are extraordinarily heavy and there is a general revival in all lines of trade throughout the state.

One of the noticeable features of the brick trade at this time is the increased demand for that material for municipal improvements of various kinds.

While the contracts for brick paving have not been as plentiful as the manufacturers and pavers would desire, large quantities of brick are being used in the construction of outfall sewers in different towns and in other municipal works. Among the sewer systems that are now under construction and proposed are those at Cuero, La Grange, Sweet Water, Yoakum, Bishop, Mart, Port Arthur, Nacogdoches, and Austin, all Texas towns.

The city council of Temple recently let the contract for paving Central Avenue, from Second Street to Fourteenth Street, with vitrified brick to J. A. Gregory of Dallas. His bid was $2.10 for paving and 35 cents per linear foot for concrete curbing. The total amount of the contract was $26,380.

Considerable brick will be required in the construction of the new water works system in the city of Merida, Yucatan, Mexico. The state legislature of Yucatan has made an appropriation of $10,000 to be given by the governor as a prize for the engineer or contractor who submits the best plans or suggestions for a modern water works system for that city.

Experiments have recently been made with clays from a number of localities in Texas with a view of determining whether they are suited for the manufacture of brick. In South Texas, where there is wonderful agricultural development going on and towns are being established almost over night, there is special attention being paid to the possible clay resources of different localities. At present, many of these new towns are remotely situated from sources of brick supply, and the establishment of local brick making plants is looked upon as not only more or less of a necessity but as a profitable proposition. All through the lower Gulf coast region of the state and in the valley of the Rio Grande, towns have sprung up during the last year or two, almost by magic. Some of these places are already equipped with brick making plants, but others are needed in order to supply the constantly growing demand for that material. One of the noticeable features of these new towns is the substantial character of their business buildings and residences. Many of these structures are of brick and special attention is paid to the better grade and more artistic designs not only in regard to the material but the style of architecture. It is claimed there is no lack of clay resources in that portion of Texas only waiting to be investigated and properly developed.

OHIO.

Columbus, O., Sept. 26.—No apathy prevails in the brick and sewer pipe industry in the Buckeye state so far, although the fall season is at hand. The manufacturers report a busy season, and feel that the demand is bound to keep up as long as good weather lasts.

Locally, however, few people appreciate the fact or realize that Columbus is among the leaders in the United States in the clay products industry. Experts says that some of the finest deposits of brick-making clay in the country are found within a short distance of this city. There are located here several companies which rank among the largest brick producing concerns in the United States. William H. Hoagland, secretary of the Claycraft Brick Co., says that the deposits of his company around Groveport are among the finest in the country, but are little known and appreciated here simply because they are so near.

The Claycraft Brick Co. has its plant at Groveport, where it produces between 28,000 and 30,000 brick a day. It is one of the largest brick concerns having offices in this city and sells its output throughout the entire United States.

Recently this company set up in Third Street, between Broad and State Streets, Columbus, a unique display of its products, demonstrating the many artistic effects which may be obtained. This exhibit cost approximately $10,000 and will be permanently maintained. It presents the appearance of an attractively walled garden and contains in its architectural arrangement practically every color and variety of brick. The local brick companies are now operating at about the limit of their capacity and report a large and growing volume of incoming business.

Because of a shortage in freight cars, brick manufacturers in the Portsmouth district report themselves as being hampered in making shipments—and on some very important orders. Manufacturers in other parts of the state are also suffering from the same cause.

The brick and tile plant at Rogers, O., which has recently been placed in operation will increase its capacity. John W. Hall, of East Liverpool, O., is at the head of this company.

W. M. Klingensmith, of No. 36 Lake street, Akron, a brick layer, recently received patent papers on a lock nut which he invented by working at odd hours after his day's labor. He has refused an offer of $20,000 for his invention.

"Better Brick" is the slogan of the officials of the Canton Pressed Brick Co., of Canton, O., which was incorporated in 1893 and which is operating plants at Somerset, Uhrichsville and Tuscarawas, O.

The output of these plants is estimated to be more than 25 million annually.

Face brick in all colors and textures constitute the chief product of this company. More than 400 of the leading building material firms in the country from Denver to Boston and from New Orleans to Montreal handle the products of this firm which have been used in many of the largest structures, both public and private, that have been erected. The demand has grown so rapidly that they have been compelled to refuse orders on account of being oversold each year. The enormous quantity of shale and fireclay controlled by this company will, it is said, last them for more than one hundred years and it has sufficient coal to operate the plants for fifty years.

The company works along the lines that no raw material is too good to put into their brick, no machinery is too good to use in making their brick and no equipment that will better their product can be spared from their plants.

H. S. Belden is president of the company, W. W. Erwin, vice president; P. W. Hartung, treasurer and P. B. Belden, secretary and general manager, and the foregoing with L. B. Hartung comprise the Board of Directors.

The Mahoning and Lake Erie Coal Company, of Cleveland, O., has had its name changed to the American Fire Clay Co.

PHILADELPHIA.

Philadelphia, Pa., September 25.—Trade conditions in Philadelphia, at the present time, are far ahead of those which prevailed at the same period last year. New buildings are going up in all parts of the city, and nine-tenths of them are of brick. There is also a large amount of paving to be done. The architects are all busy drawing plans for new operations, and from all indications the future is very bright.

Clay product manufacturers and supply men when approached on the subject of, "Is the presidential campaign affecting trade conditions to any extent?" are all firm in saying that it is not, and that they do not think that it will cause any slackening up of trade, as most of the big builders have too much work to do to give any attention to politics at the present time.

There are, at the present time, in Philadelphia, 80 stories of hostelries going up in five new modern buildings, and more or less brick is being used in each one. The Ritz-Carlton, at Broad and Walnut, is composed entirely of brick from the second story up, thus making 12 out of the 14 stories with an outer surfacing of brick. Besides these hotels, there are a number of modern apartment houses under construction also, and the most of them are to be built entirely of brick.

The Pennsylvania Manufacturers' Association wants to establish a new Workmen's Compensation Act, when the State Accident Commission meets in Pittsburgh.

When the Commission met in Philadelphia a few weeks ago, several changes were acted upon, but the way the act now stands, there are a number of clauses which could be changed for the better. Among these is the child labor question, which a local society is trying to change, by making the age limit 16 years of age instead of 14, as it now is, and reducing the child labor working hours from 52 hours a week to 48 hours, and another feature is the guarding of children about machinery. This clause permits no children to be employed about machines, or where there is any possible danger, such as in wood-working establishments, machine shops and certain parts of brick factories. Should these changes be put into effect, it will be a very serious proposition to a large number of employers, who will have to hire older persons, and necessarily pay them a higher rate of wages, which will result in another boost to the high cost of living.

Improved types of factory and warehouse construction in this city were praised by Prof. Nicholas Lachtinn, of the Imperial Technical School of Moscow, and director of the experimental laboratories of the Moscow School of Architecture, who spent a few days here inspecting the different types of buildings in Philadelphia.

The Reading Railway has awarded to the Beard Construction Co., of Reading, the contract for the erection of a brick freight house at Gettysburg. Bids for a brick freight house at Schuylkill Haven will shortly be asked for.

The Pomeroy Construction Co. has just been awarded the contract for the construction of the new branch of the Free Library of Philadelphia, which will be an imposing structure of brick and terra cotta, costing $32,200.

The P. S. V. Railroad Co. contemplates extending a siding to the Glen-Gery brick works, which is situated just outside of Reading, Pa., and this will be a big improvement for both the brick company and the railroad, as millions of brick are made at the Glen-Gery plant each year.

At the next session of the Pennsylvania Legislature, Senator James P. McNichol, of Philadelphia, will introduce a measure making it a felony for clerks to reveal what may be termed "office secrets." The statutes now cover telegraph and telephone operators, but stenographers and auditors are still exempt. The necessity for this bill grows out of the fact that a regular business has been built up, in Philadelphia, by clerks who furnish advance information as to purchases intended, goods received on approval and contracts that have been bid upon. These "leaks" are not uncommon, and in a number of cases, large contractors and brickmakers in this city have lost some very valuable orders and bids, through "leaks" in the office force.

The Eastern Brick & Tile Co., with offices in the Crozier Building, Philadelphia, has a number of very good contracts booked, and is pleased with the outlook for the fall season. Notable among the contracts on which it is working is one for 1,000,000 brick for a factory building to be erected in Camden, N. J., and another for the brick and tile for a $10,000 suburban residence in Philadelphia. In the very near future the Eastern Brick & Tile Co. will establish a branch office with the Spring Garden Brick Co. at Pottsville, Pa.

Manager Brady, of the Independent Brick Co., located at 1001 Crozier Building, in talking over the labor question, which is at the present time a very serious matter in Russian brick plants, states that if the laboring men in this country fail to give their full quota to the brick yards, which at the present time are quite short of help, a similar condition will soon prevail here, and building operations will be completely tied up, and a very serious condition would result.

The Independent Brick Co. has the contract to supply the brick for a new glass factory at Glassboro, N. J., which operation will consume over 3,000,000 brick, also a municipal contract amounting to many thousands of dollars.

Mr. Edward Stokes, "the pipe man," located at 1208 Harrison Building, has been away from his office for some time, suffering with a complication of diseases, which were thought at first to be very serious. But Mr. Stokes was not to be kept confined long, and was soon back on the job, busier than ever. Mr. Stokes has just been awarded the contract for supplying about thirty thousand feet of pipe for an operation at Beverly, N. J.

The Independent Brick Co. and the Eastern Brick & Tile Co., of Philadelphia, with manufacturing plants at Lock Haven, Pa., have applied to the Inasmuch Mission, a Philadelphia institution for "down-and-outs," for a large force of men as laborers to go at once to Lock Haven. The brick companies have not been able to cope with the demand for all kinds of brick and the seriousness of the labor shortage threatens to immediately choke off the supply. They have advertised for unskilled labor without any practical result and J. F. Brady, the general manager, has decided to follow in the footsteps of the men in the iron and steel industry of Lock Haven by applying to the Inasmuch Mission to supply the men in as large numbers as possible. Men who have come from the Inasmuch institution have been found in every case to be good workmen, and are just waiting for some such change to get to work, where they can start life over again.

After a very pleasant trip through the southern states, Mr. J. Parry Lukins, 246 Mint Arcade, has returned home with a big bundle of contracts.

Bert Childers of Bonanza, Ore., is starting a brick manufacturing plant at Bonanza.

The King City Brick & Enamel Works of King City, Cal., is to soon dispose of its property, including 14 acres of land.

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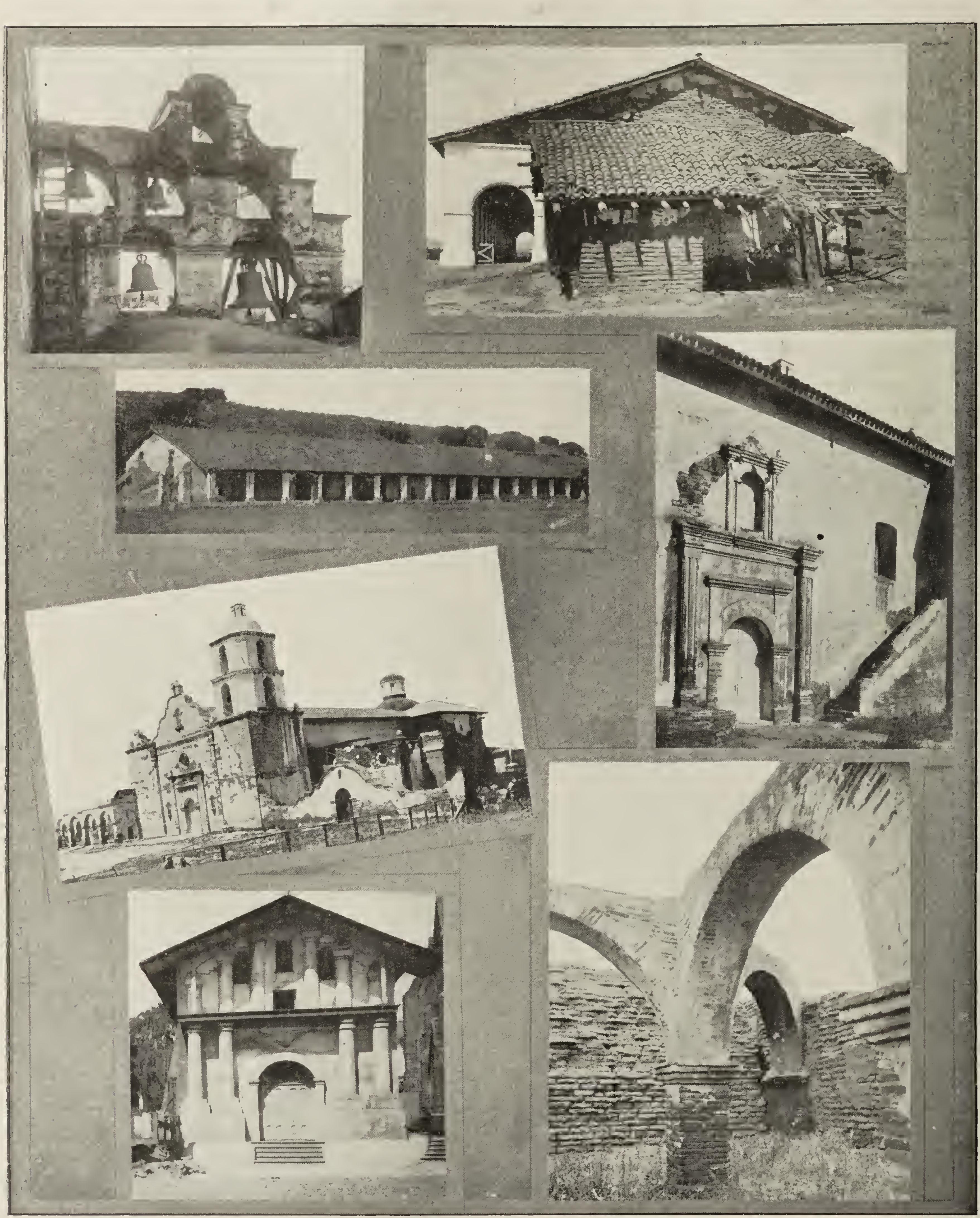
SUPREMACY OF CLAY PROVEN BY STATE OF OLD MISSIONS



Historic Missions in California, Show that the Spanish Padres Were Familiar with the Value of Clay as a Lasting Building Material. In the Upper Row, at the Left, Is Shown the Famous Belfry and Bells of the San Gabriel Mission Building in 1880. At the Right, Is Shown the Remains of a Tile Roof in Use Since 1805. The Tile Themselves Are Practically Intact. In the Second Row, at the Left, Is Shown the Well Preserved Mission La Purisima Concepcion, Built in 1825. Note the Tile Roof, Massive Pillars and Walls All of Clay. At the Right, Is a Closer View of the San Luis Rey Mission, Shown at the Left. The Walls and Stairs Are of Adobe Brick. Below at the Left, Is Shown the Well Preserved Mission Dolores at San Francisco, Built in 1872, Which Withstood Successfully the Earthquake of 1907. At the Right, May Be Seen the Corner Arches of Mission San Juan Capistra, Built of Sun-dried Adobe Brick in 1797.

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BRICK AND CLAY RECORD

OCTOBER 15, 1912

THE SPANISH MISSIONS OF CALIFORNIA

Clay Plays an Important Part in California's Early Day History—Roofing Tile Intact After Over a Hundred Years' Exposure to the Elements

By **IRA A. WILLIAMS**

In Charge of Ceramics, Iowa State College

THE printed annals of clayworking in the United States will contain no more interesting chapter than the story of the building of the old Missions in California. As yet this chapter is unwritten. It will contain, when completed, the beginning of California's history and it will be a tale of indomitable courage and untiring industry. For it was the fortitude and dauntless courage of the Spanish Padres that impelled them to undertake, early in the seventeen hundreds, the colonization and conversion of the native Indians in the new and unexplored land, which later became the state of California.

As closely interwoven in California's development, as the "gold rush" of 1849 and succeeding mining activities, is the role that clay has played in nearly all of her earliest building construction. The building of the Missions, however, marks a period beginning nearly one hundred years before the discovery of gold, and cannot but be regarded as equally crucial in the state's history as the unparalled gold mining activities of the fifties.

Of the twenty-one Missions that are scattered lengthwise through California, from San Diego on the south to Sonoma at the north, nineteen were originally constructed largely, if not entirely, of clay. Besides the Mission buildings, the hundreds of dwellings that clustered about them and, indeed, practically all of California's earlier buildings were of adobe brick. Even the massive walls of Sutter's Fort, which now serves as a museum in the Capital city of Sacramento, and which for years was a haven of refuge from the Indians and the other terrors of a new land, were laid up of clay and still retain their integrity, and today show the marvelous lasting qualities of that world-old building material.

The so-called "adobe" employed by the Padres and their followers in the Missions, is a type of light buff clay found quite generally on the hill slopes and in the river valleys of the southern half of the state. It is easily molded, holds its shape well, and dries into a hard, strong brick. Most of the buildings and enclosing walls were put up of the unburned brick, laid in a mortar of the same clay. The interiors were occasionally finished in burned clay and the floors were frequently of burned brick or tile. The exteriors were almost universally covered with a lime whitewash.

No doubt the work of making the brick and laying up the walls was done by the Indian converts and slaves, under the direction of the Padres. But a crude type of artistic skill is shown in the decorations of some of the chapel entrances, the interior walls and about the altars that can scarcely be attributed to these simple natives. We are told that mechanics and artisans were brought from Mexico, where years' of experience had equipped them for such work, as adobe had long been used there as the principal building material.

Clay Roofing Tile Used.

Many of the buildings were covered with clay tile roofs. The roof tile (ortejas), also the burned brick and floor tile were made and burned where used, the labor being done by Indians, directed by the padres and their skilled assistants. Interesting as they should certainly prove, we do not find, today, much definite information as to the methods or equipment employed in making these primitive products.

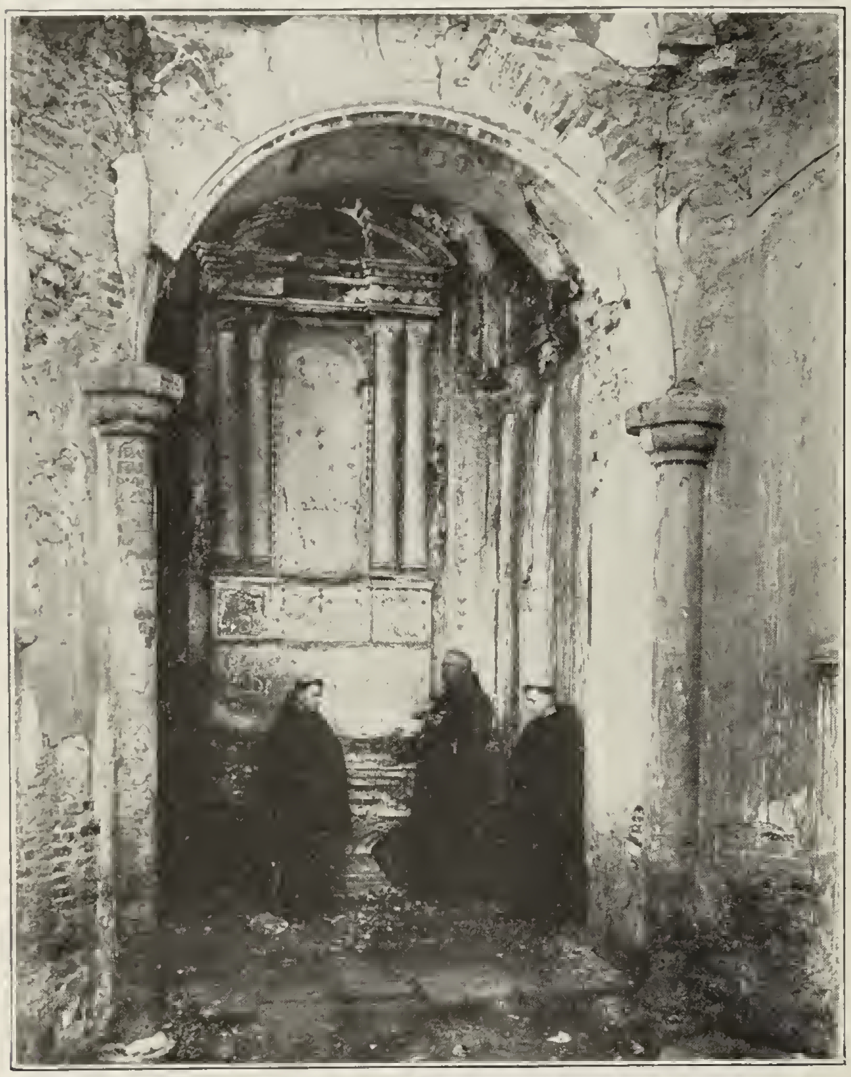
The accompanying photographs show the style of the Mission structures and some architectural details in various parts of the buildings. Not all are now standing as originally constructed, though care has been taken to select views for this article that show the original walls, decorations, etc., that have stood the combined attack of the elements and rough usage for a hundred years or more.

Perusal of a good map of California will show the locations of the old Missions in a zigzag line, from near the Mexican border to beyond the Golden Gate. In the order of their establishment and dedication they are as follows: Mission San Diego de Alcala, 1769; Mission San Carlos Borromeo (Monterey), 1770; Mission San Antonio de Padua, 1771; Mission San Gabriel Archangel, 1771; Mission San Luis Obispo de Tolosa, 1772; Mission San Francisco de Asis (Dolores), 1776; Mission San Juan Capistrano, 1776; Mission Santa Clara, 1777; Mission San Buenaventura, 1783; Mission Santa Barbara, 1786; Mission La Purisima Concepcion, 1787; Mission Santa Cruz, 1791; Mission Nuestra Senora de la Soledad, 1791; Mission San Jose, 1797; Mission San Juan Baptista, 1797; Mission San Miguel, 1797; Mission San Fernando Rey de Espana, 1797; Mission San Luis Rey de Frania, 1798; Mission Santa Ynez Virgin Martyr, 1804; Mission San Rafael Archangel, 1817; Mission San Francisco de Solano de Sonoma, 1824.

"The Royal Road" To Be Restored.

In the time of the Franciscan Fathers, when each of the Missions was occupied by its following of devotees, a direct road, known as El Camino Real, "The Royal Road," connected the twenty-one Missions. Portions of it were then only bridle paths trod by the padres. There is at present a movement on foot to restore the El Camino Real and make it a portion of California's admirable system of public roads. This will provide about 700 miles of highway through most prosperous sections of the state besides preserving permanently an important historic landmark and nothing would be more fitting than to pave the road with brick, making a road that would be as lasting as the old missions.

Each of the Mission establishments included a chapel and dwellings for the padres and married neophytes, servants, etc., besides storehouses and sheds. As a rule, a separate building was provided for the girls and one for the young men. These buildings, always of adobe or stone, were enclosed by an encircling wall, of the same material, which was often miles in length. Though scarcely germane to the subject of clay, it is nevertheless of decided interest to mention that, in the height of their prosperity, the Missions accommodated over 20,000 Indian converts and possessed more than 152,000 head of cattle, vast herds of sheep, horses, thousands of bushels of grain, orchards and other property to compare.


Interior of San Luis Rey Mission—Pillar, Arch and Altar Decorated in Adobe Brick and Clay Tile.

The oldest of the missions, San Diego, was built entirely of adobe and had an enclosing wall fifteen feet high. Under a decree of the Spanish Crown, in 1813, all Mission property was confiscated. The following so-called "secularization" of the Missions proved to be the beginning of their decadence and San Diego, once most prosperous, has through neglect and misuse, almost disappeared. Of the original adobe structures, only the facade of the church remains.

On the sites of Missions San Antonio de Padua, Santa Cruz, Nuestra Senora de la Soledad and San Rafael Archangel, there remain only ruins to mark the places.

San Carlos is the Mission church of Monterey and the most celebrated of the California Missions. It is a stone building in which in its restoration the original architecture has been preserved with the exception of the clay tile roof.

The first adobe church at Santa Barbara Mission and six other buildings were, on account of their size and the damage suffered by the earthquake of 1812 replaced in 1820 by a stone edifice. San Gabriel is likewise a stone structure, only the bell-tower and wall buttresses of adobe brick remaining.

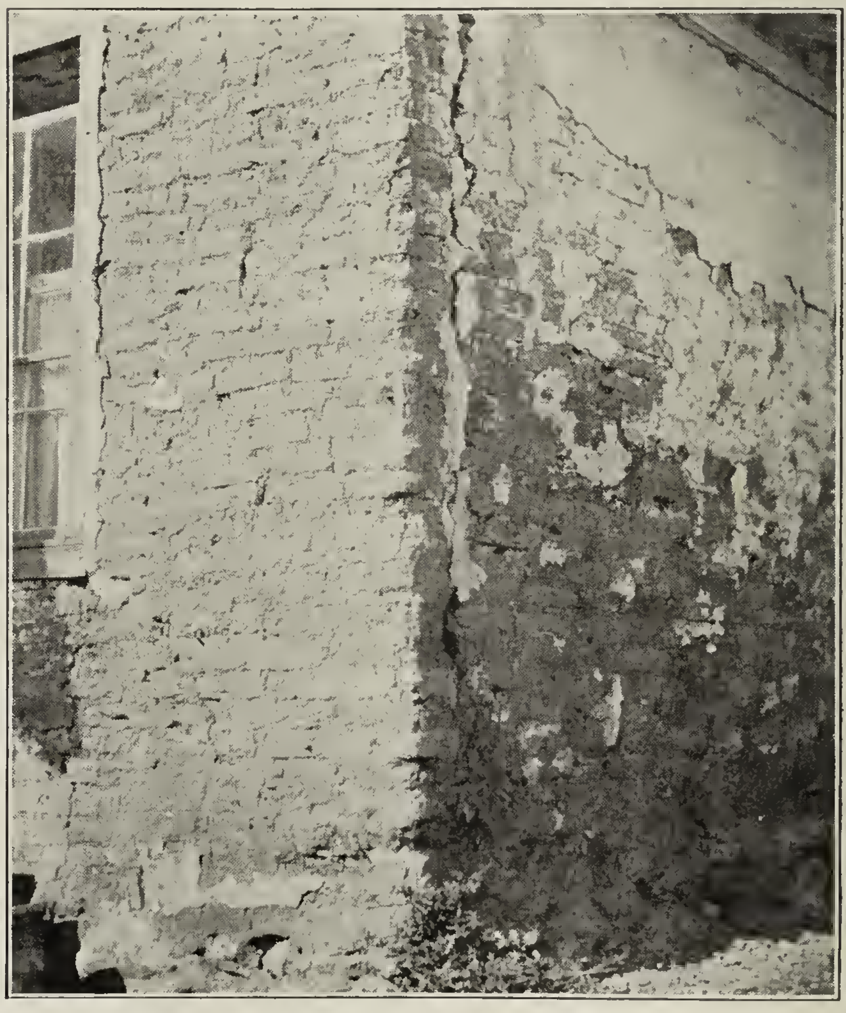
Practically nothing remains of the original adobe buildings at San Luis Obispo, they having been replaced by more modern structures.

A great deal of interest attaches to Mission Dolores, which stands in the heart of the City of San Francisco at Sixteenth and Dolores Streets. Once a large establishment there now remains but the small chapel building of adobe brick. The architecture is a combination of Moorish, Mission and Corinthian styles. This Mission passed unscathed through the San Francisco earthquake of 1907, while modern adjacent buildings were destroyed.

Mission San Juan Capistrano is fifty-eight miles above Los Angeles, at the little town of San Juan. What was once apparently a magnificent building suffered destruction by the earthquake of 1812. But portions of one end-wall still stand. The photograph of the three-way corner arch is reproduced to illustrate an architectural feat, to which the use of the sun-baked adobe brick was obviously no hindrance.

Brick Walls Withstood Earthquake.

San Buenaventura Mission, in the town of Ventura, started in 1873, yet shows in the old church the stability of the original materials of construction. The walls of adobe brick, have stood for one hundred and twenty years. Although somewhat injured by the earthquake of 1812, the damage was not serious, and the church is still used as a house of worship.


Corner of San Jose Mission, Showing Adobe Brick Construction —Crack Caused by Earthquake.

Mission La Purisima Concepcion, near Lompoc, California, was eleventh in the original dedication. The portions of the old structures remaining today were built in 1825, the earlier buildings having been destroyed by the

Indians, the preceding year. It is long and low and entirely of adobe brick with a red clay tile roof. The heavy pillars which support the portico and the end buttresses evidence to the substantial character of the old building.

A little northeast of the city of San Jose, stands what both disuse and misuse have left of the historic old Mission of that name. As with several of the early missions, its buildings were first made of wood with grass roofs, and later replaced with clay. At present, the modest low structure shows evidence of exceeding neglect. Though the walls are still intact, in places, small cracks have opened, the results of the several successive earthquake shocks through which it has passed. When it is recalled that Mission San Jose is in the land of the vine, the presence of casks and barrels about it discloses at once its present use, and it is stated that the wooded portions of the structure were saved from complete destruction by fire a number of years ago by the application of hogsheads upon hogsheads of best California vintage then being housed in the building.

Burned Floor Brick Used.

San Juan Bautista Mission, six miles from Sargent, California, was originally one of the largest of the mission churches, being 200 by 70 by 45 feet. Through disuse it is at present in a poor state of repair, and is being remodeled. Some of the most interesting relics of interior adornment, furniture, vestments and musical instruments are to be found there. Begun in the middle of 1797, it required the continuous labor of hundreds of workmen for fifteen years to finish the chapel. Sun-baked adobe brick were used and "ladiello" or burned floor brick. The adobes were made of a muddy clay, mixed with straw or grass, and sun-dried. The old standard size was 30 by 16 by 4 inches and each brick weighed about fifty pounds.

Interior of Pala Mission Chapel Building in 1816. Note the Clay Tile Floor, Tile Roof, and Decorated Adobe Walls.

The "ladiellos" were molded 12 by 8 by 2 inches and hard burned in a subterranean kiln. The old brick floor still remains in San Juan Bautista, scarred and worn by the feet of the patient padres and their hundreds of devout followers, after enduring well a century of service.

The San Miguel Mission buildings, as they stand today, row of low buildings, all of adobe, with floors of burned brick. The original decorations, paintings, frescoing, all the work of Indian artists are such as to make San Miguel perhaps the most interesting place of its kind in California.

Only ruins of the original Mission San Fernando, remain. In the illustration the adobe brick wall and the method of supporting the clay tile roof are shown.

Faced With Burned Brick.

San Luis Rey, forty miles north of San Diego is said to have been the most magnificent of mission establishments. The chapel was built of adobe, faced with burned brick, and much of the original construction still remains in the present building.

Pala Mission was established as a branch of San Luis Rey. Its principal buildings are long and low with massive adobe pillars supporting a long veranda in front, covered with a roof of clay tile or tejas. The illustration shows the floor, roof and brick walls with interior decorations.

Santa Ynez is a low building of adobe with pillars supporting the usual veranda. It is lined with burned brick and floored with large square tile.

Last of the missions to be built, San Francisco de were put up in 1800, and consist of a chapel and a long Solano de Sonoma, was used but a comparatively short time for religious purposes. The long row of one-story adobe buildings stands today, as completed in 1824. Although no doubt to be regarded as a desecration of the historic place, in its later years, it has served as a winery and storehouse.

As monuments to the use and durability of clay as a building material and as a milestone in the evolution of the clay-working industry in this country, the old Spanish Missions in California are objects well worthy of most careful study.

NO STRIKES IN POTTERY TRADE.

Nineteen Years' Industrial Peace is Result of Liberal Labor Policy of Association.

The United States Potters' Association has accomplished excellent work in adopting and maintaining a broad and liberal policy in dealing with labor problems. The result has proved eminently satisfactory both to the employers and to the workmen's union. It has resulted in practically steady employment and has prevented the occurrence of any strike in the pottery industry for nineteen years.

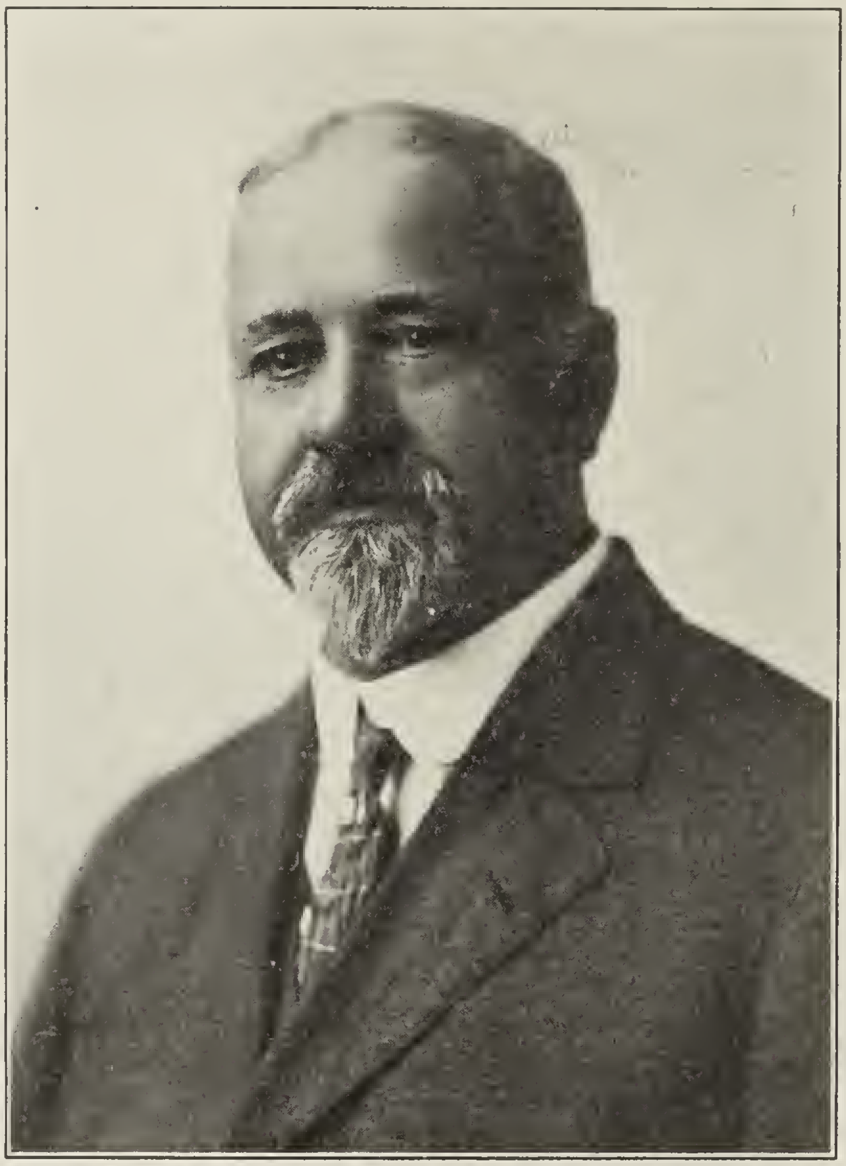
It has been responsible for a general improvement in the construction of the pottery plants, especially in respect to sanitary arrangements and the protection of the health of all pottery workers, some of the modern pottery plants being almost ideal in this particular.

CLAY MANUFACTURER SEEKS IOWA GOVERNORSHIP

CLAY product manufacturers generally and especially in Iowa, irrespective of party or politics, are a unit on the candidacy of one "Bull Mooser" if they are divided on issues elsewhere. This Progressive candidate, who is drawing the active support of the Iowa clayworkers, irrespective of party affiliation, and the best wishes of clayworkers throughout the country, is none other than Judge J. L. Stevens, of the Boone Brick, Tile & Paving Co., of Boone, Iowa, the popular nominee for governor.

Probably there is not a better known man in the clay field than Judge Stevens. He has been a prominent figure at all the conventions for years, and if he is one-half as popular with the general voters of his native state as he is with his fellow workers in the clay product industry he will sweep Iowa with the biggest majority that state ever has given a candidate for governor. Reports from Iowa indicate that this is just what Judge Stevens is going to do.

Judge Stevens impresses one at first sight and acquaintance as being a man born to lead, one to direct the affairs of others, and to guide. Some may find in him, traits entirely foreign to other men of affairs and of public life, but he has the good essential qualities of the man who does things—and who does them well, and who does them at the right time.



Judge J. L. Stevens of Boone, Ia.—Iowa's Progressive Nominee for Governor.

Judge Stevens has been prominently identified with the politics of his native state for a number of years. He first entered politics in 1878, when he was nominated by the Republicans of the 11th Iowa district for district attorney and elected. He was re-elected, in 1882, and proving such a capable prosecutor he was elected district judge in 1886 and re-elected in 1890.

In January, 1893, Judge Stevens moved from Ames, his home until then, and took up his residence at Boone, resigning the judgeship. He became a member of a law firm with Hon. S. B. Dyer, and later associated himself with his son, J. E. Stevens, and Attorney H. E. Fry, which partnership still exists.

Judge Stevens was appointed by President McKinley as commissioner to adjust the claims of the Des Moines river land settlers, and adjusted all these claims. There were no appeals from his decisions, and all were approved by the secretary of the interior, Mr. Bliss.

He has just completed his work as one of the members of the employers' liability commission, created by the last general assembly and appointed by Governor Carroll.

He was one of the attorneys of the Chicago & Northwestern Railway company for several years, but resigned his position five or six years ago.

Aside from his labors in the legal profession, Judge Stevens has been engaged in many prosperous business ventures. He is a director in the Union National bank of Ames, and is now a director of the Boone National bank of Boone. He was the first president of the Ames & Nevada Telephone Co., in 1879, and was also the first president of the Ames & College Railroad, now the Fort Dodge, Des Moines & Southern. Judge Stevens also organized the Boone Brick, Tile and Paving Co.

In politics, Judge Stevens has always been a Republican, casting his first vote for U. S. Grant in 1872, and continued in the Republican party up to the adjournment of the Republican National convention in 1912. He was a member of the National convention at Philadelphia which nominated McKinley and Roosevelt and also of the National Progressive convention which nominated Roosevelt and Johnson.

At present he is the national committeeman for Iowa in the Progressive party and its standard bearer for governor. Judge Stevens is known as a fighter and when he gets into the game his opponents have to hurry some to catch him. That is why the people in Iowa are so confident that Stevens will be their next governor. He is a man who refuses to quit and goes in for all he is worth.

Here's hoping that at least this "Bull Mooser" wins out.

MAPS OUT GREAT HARD ROAD CAMPAIGN

National Congress Held at Million Dollar Pier, Atlantic City, Starts Concerted Movement to Promote Good Highways for the United States

The greatest campaign ever planned for good roads was launched at the American Road Congress, Atlantic City, Sept. 30 to Oct. 5. All the various associations represented joined in a concerted movement to fight for improved conditions, legislation and whatever else might promote good roads. Other steps taken follow:

Speakers discussed the various phases of road construction.

Action was taken to urge the promotion of engineering education by inducing the leading universities to establish specific ana practical courses for the instruction of highway engineers.

Resolutions were adopted urging the restoration of the old national roaa.

THE sessions of the American Road Congress which were held at the Million Dollar Pier, Atlantic City, N. J. September 30th to October 5th, were well attended, delegates being present from practically every state in the Union. The Congress was made up of the American Association for Highway Improvement, the American Automobile Association and the National Association of Road Material and Machinery Manufacturers.

The convention was called to order by Logan Waller Page, president, American Road Congress, followed by introductory remarks by Robert P. Hooper, president of the American Automobile Association; Mayor Riddle, of Atlantic City, and Hon. Woodrow Wilson, Governor of New Jersey, made speeches welcoming the delegates to that state.

Some of the addresses delivered were: "The Making of Automobile Laws," Charles Thaddeus Terry, chairman A. A. A. Legislative Board; "The Farmer and His Road Using," U. P. Hull, National Grange Legislative Committee; "A National System in Making Roads," Powell Evans, President Automobile Club, of Philadelphia; "Organized Effort versus Individual Effort," H. L. Vail, County Commissioner, Cleveland, Ohio; "Why New Jersey Opened Her Gates," Hon. Walter E. Edge, New Jersey State Senator: "How to Work for State Aid," Joseph H. Weeks, Chairman, Good Roads Committee Pennsylvania Motor Federation.

"The Maine Plan," J. C. Scates, Secretary Maine Automobile Association; "National Old Trails," Judge J. M. Lowe, President, National Old Trails Road Association; "The logic of Federal Aid," Judge H. C. Gilbert, Jackson County, Mo.; "One Plan of Federal Aid," Hon. D. W. Shackleford, Missouri Congressman; "Good and Poor Brick Roads," T. A. Randall, Secretary of National Brick Manufacturers' Association.

"Business Organizations as Good Roads Accelerators," G. Grosvenor Dawe, Chief Editorial Division, Chamber of Commerce, of the United States; "The Lincoln Memorial Highway," Hon. Wm. P. Borland, Missouri Congressman; "How to Encourage the 'In America First' Idea," Preston Belvin, President Virginia State Automobile Association.

Other addresses were given by Mrs. Donald McLean, Honorary President General, Daughters of the American Revolution; Dr. Joseph Hyde Pratt, President Southern Appalachian Good Roads Association; S. S. Ballard, Secretary, Automobile Club of Vermont; Dell M. Potter, Vice President, Ocean to Ocean Highway Association; Hon. Frank D. Lyon, Secretary, New York State Automobile Association.

"The Road System of France" was explained by M. de Pulligny, Engineer in Chief of Bridges and Highways of France, followed by an address by Hon. J. E. Caron, Minister of Agriculture and Roads, Province of Quebec. "Road Improvement in Canada" was discussed by W. A. McLean, Provincial Engineer of Ontario, Canada. "The Effect of Good Roads On the Cost of Living," was discussed by W. W. Finley, President, Southern Railway Company; "Good Roads, Rural Delivery and Parcels Post," by P. U. De Graw, Fourth Assistant Postmaster General.

Many other excellent addresses were given by prominent men on subjects of vital interest to good roads advocates, including a talk on "The Benefits and Burdens of Road Improvement," by Jesse Taylor, Secretary, Ohio Good Roads Federation.

At the present time, the United States is spending some $200,000,000 a year for improved highways and the demand for expert highway engineers exceeds the supply. Through this Road Congress an effort will be made to further the promotion of engineering education, and efforts will be put forth to induce the leading universities to establish specific and practical courses for the instruction of highway engineers.

There are about eighty-two universities devoting some attention to highway engineering, which instruction, however, in most cases is merely part of the general training of engineers, so that it is hoped there will be a sufficient number of trained men to handle the great problem that has been thrust upon the United States, by the widespread agitation for a better system of public highways that will reduce the cost of hauling crops and permit shipments by farmers at all seasons of the year.

Ashamed of America's Roads.

Representative Oscar W. Underwood recently made these remarks, "When I went up into the mountains of Switzerland and Italy and saw those magnificent turnpikes, graded roads, running up the mountain sides, smooth as a parlor floor, gutters on the side, carrying off every drop of water, so that the people even in that mountainous country could carry their produce to market at the lowest possible outlay; then I thought of the terrible roads that I had seen in my own home state; that I had seen in almost every state in the Union, and for once and the only time in my life I had to bow my head with shame and could not declare that so far as our road system was concerned, I was proud of being an American citizen."

Representative Underwood has introduced a bill in Congress, which has been passed, providing for a Congressional committee to investigate all phases of the road subject.

Lee McClung, Treasurer of the United States and acting treasurer of the American Road Congress, made the statement, "That in comparatively few instances, is the same care taken with state funds for road improvement, that is taken by financial institutions for private enterprises."

Powell Evans of Philadelphia, in his address said, "The French nation has gone further than any other country in the practice of a national system of good roads. Such a system is not applicable to this country, but a uniform state system, merging into a harmonious system as a whole would be better. In France, a large portion of the roads radiate from Paris as a center. In Pennsylvania, the people are not keen for state aid in the development of roads as it has been discovered to be not very profitable. In 1903, the state assumed 75 per cent of the burden of a $50,000,000 appropriation. This worked very unsatisfactorily in that it failed to make provision for maintenance. A campaign has been started for the improvement of 8,000 miles of roads leading to every important city and town in the state, to cost $125,000,000. Everybody is for it but the Grange. Under the previous $50,000,000 appropriation, there was no sequence to the roads. They led everywhere but somewhere and you could not find a continuous road for fifteen miles."

The American Road Congress is really a consolidation of forty of the most important road organizations in the United States.

The National Association of Road Machinery and Material Manufacturers' Association had a large space for their exhibits and every industry relating to the building and care of roads was represented and it was possible for those interested to observe all the labor saving devices, methods and formulas that American ingenuity and inventive genius have brought out during the past century.

The Government Exhibit.

The Government exhibit was located in the main building and consisted of two series of miniature models. One series showed the development of road building from the early Roman roads to the types of roads now in use. The other series showed all modern types of road, such as sand-clay, gravel, brick, macadam, bituminous macadam and concrete. It included models of bridges, culverts, other drainage structures, electrically operated models of rollers, crushers, etc. This exhibit was the most complete and beautiful road exhibit ever shown.

The state exhibits were located in machinery hall and afforded all possible information relating to the roads within their borders. The states represented were New York, New Jersey, Ohio, Illinois, Minnesota, Kansas, Arizona, Montana, Virginia, North Carolina, South Carolina and Tennessee.

The Development of Transportation.

The exhibition showed the development of transportation from the primitive human burden bearer to the modern automobile and locomotive. The "Old Trails" exhibit, revealed scenes along the famous old roads and trails, such as "The Old Cumberland Road" and the "Santa Fe Trails." The "Old Trails" committee of the Daughters of the American Revolution took an active interest in the exhibit.

Mrs. Donald McLean made a strong plea for the restoration of the "Old Trails" or "the National Road." She said: "This old trail is Nature's highway, followed first by the buffalo, then by the heroic settlers who carried civilization across the continent. Notable among such pioneers were Daniel Boone, James Bridles and Kit Carson. The natural Old Trails highway is the only road of such character conceived of and endorsed by women, and to a woman must be credited the suggestion that telegraph and telephone poles along this national highway should be marked with red, white and blue bands, so that transcontinental travelers and tourists by following the flag need neither guide nor road map, and yet need not worry for fear of losing their way."

The address by T. A. Randall, Secretary of the National Brick Manufacturers' Association was an interesting one and sought to solve the problem of good and bad brick paving. Mr. Randall used paved streets of Sandusky, Ohio, to illustrate his point, saying in part:

Eighteen years ago there lived in Sandusky, Ohio, a wise and painstaking engineer, John W. Miller. Under his direction a mile of brick pavement, part city street and part rural road, was laid, extending from the center of the town out into the suburbs. Over this pavement during all these years daily has passed much traffic. Today the pavement is perfectly smooth from one end to the other.

Fortunately, while this pavement has been torn up at times for the laying of gas mains and water pipes, it has, luckily, always been replaced as carefully as it was originally laid, so that today it is as good as any new pavement. As you know, most pavements are damaged irretrievably by being torn up, but when such work is done properly, no harm is done to a brick pavement, as demonstrated in this case. During these eighteen years, not one dollar has been spent on this pavement for repairs, yet it is still an ideal roadway and bids fair to continue such for another twenty years, or perhaps twice that length of time. Some may say it is an exceptional pavement. That I concede. Why it is an exceptional pavement is told in two words—proper construction.

No Excuse for Poor Roadways.

Some may say, "I have seen brick pavements, but never one like this after eighteen years' use." Very true, but the reason, and the only reason, is that you have never seen a properly constructed brick pavement that has been down that length of time. There are plenty of poor brick pavements, poor chiefly because of poor construction. And I want to give another demonstration proving this fact. I took this particular street as an illustration because of the comparison it affords.

It is a portion of the main business street of Sandusky, and was paved the same year (1904) as the other roadway, and with brick of the same grade, but evidently with much less care in the method of construction. Today it is a rough and undesirable pavement. This pavement was laid under the same specifications as the good pavement, but some minor but very essential details of construction were carelessly slighted. Will P. Blair, secretary of the National Paving Brick Manufacturers' Association of Cleveland, Ohio, and others who have been studying this subject for some years, determined, if possible, to learn the real cause of failure in one pavement and the remarkable success in the other. Accordingly, experts visited Sandusky, and, with the co-operation of the city engineer, had a stretch of some fifty square feet of each pavement, the good and the poor, taken up.

The good pavement was perfectly bonded from top to bottom, every course of brick was intact, just as when it was first laid. The foundation was right to begin with and there was a two-inch sand cushion, thoroughly compressed, affording a smooth, even bed for the brick and insuring a comparatively noiseless pavement. The cement filler had been so applied that both sides and ends of each and every brick were imbedded in it.

Had Formed Solid Mass.

The brick and cement formed a solid mass, making the pavement monolithic in character. The result was a perfectly smooth, unbroken surface. From one end of the street to the other there has been no chipping of brick or disintegration of the cement filler or binder.

A close inspection of this mile of 18-year-old pavement, made late in August, did not disclose a single defect. The traffic over this pavement has had no perceptible effect upon it, the pavement showing scarcely any wear at all. If left undisturbed this pavement will be just as good at the end of another eighteen years, without a dollar of expense for upkeep. Isn't this an ideal pavement?

The section of the poor pavement taken up disclosed the secret of its failure, if a pavement can be called a failure which, after eighteen years of use, is, though rough, still doing service, with no expense incurred for repairs. As a fact, it is a failure only by comparison with the perfect pavement. The same grade of brick was used in each pavement and the traffic is much the same on each street. Why the difference? The answer is easy. It is in the careless construction of one, and the careful construction of the other.

In the good pavement, the cement filler was properly applied. In the poor pavement, not half of the bricks were imbedded in the cement. Some of the bricks had cement on one end and none on the other; some of the bricks had cement on the upper portion and little, or none, on the lower, and vice versa. In some small portions of the removed pavement the cement was properly applied. In such portions, the pavement remained smooth; where there was little or no cement, the pavement was the roughest.

To my mind, this investigation solves the mystery of good and poor brick pavements. Scientists are at work on the problem and in time a full report of the finding will be made public. I feel quite confident that the report will justify the opinion I have expressed.

Railroad Interested.

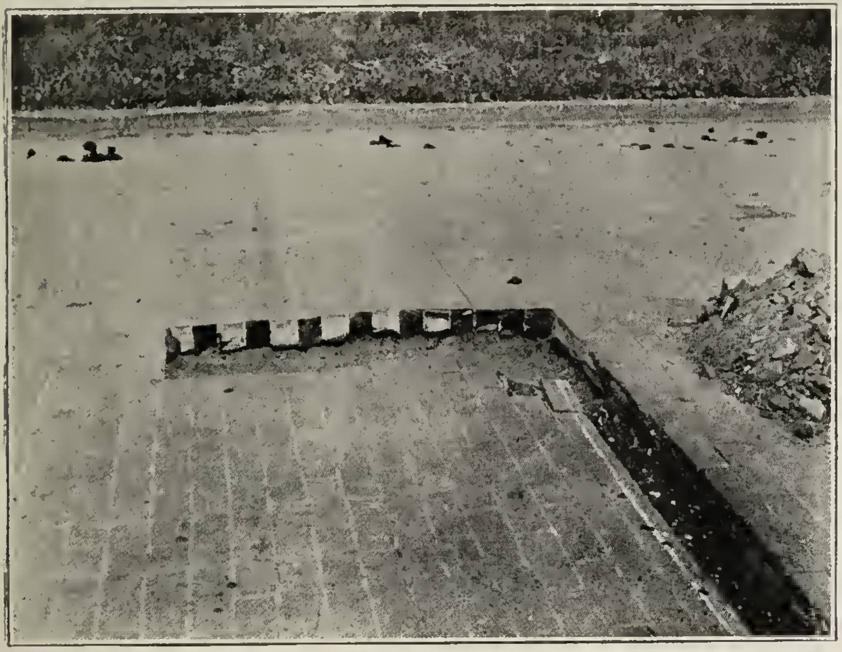
The trunk line railroads have taken a strong interest in good roads and many railroad presidents and other officials were present. Mr. Finley, president of the Southern Railway, pointed out that while improved roads will benefit the farmer first of all, the railroads will benefit eventually, inasmuch as they will not be compelled to carry too many empty freight cars along their rails, on the roads to shipping points. The railroads are congested at some seasons, but suffer from idleness at others. Good roads will equalize transportation, reduce the cost of living to the consumer.

Canadian and Southern boosters were present and were advocating the building of a great international highway from Quebec to Miami, Fla. This project is enthusiastically favored by many associations.

The United States is now paying $1,000,000 a day for our roads, more than $300,000 of which is wasted. Some of the country's roads are among the finest in the world; some of them are the worst in the world. It was to find ways and means of stopping the tremendous drain of road revenues and of introducing the best possible methods of management of construction and of maintenance that the leading engineers, chemists, financiers, legislators, educators and executives assembled at Atlantic City.

Construction and Maintenance Problems.

The last two days of the convention were assigned to the engineers, who discussed problems of construction and maintenance, and to the various associations, which met and mapped out their plans of action, correlated their efforts and made definite arrangements to pull together in the greatest campaign for road improvement and conservation ever undertaken.



The Section of Columbus Avenue Pavement, Sandusky, O., Taken Up for Inspection. The White Lines Show the Section Removed.

A Cut in the Pavement Preparatory to Taking Out the Brick for Testing Purposes. Observe that the Ends of the Brick are Completely Coated with Cement.

There are 2,200,000 miles of roads in this country, nearly 1,100,000 miles of which are included in the rural delivery service. The splendid road system of France carries a traffic one and a third times greater than that nation's railway traffic. When this stage of usefulness has been reached by the public roads of the United States a yearly freight exceeding 1,200,000,000 tons will be handled thereby.

Low Cost of Hauling.

The exceptionally heavy traffic on the French roads is due to the low cost of hauling, which is less than 10 cents a mile, while in the United States it costs 23 cents a mile. When the cost of hauling is lowered to a marked degree, production will be stimulated, population will be better distributed, and the cost of living will of necessity be lowered, because the waste of time and energy now imposed upon traffic by bad roads will no longer exist.

In the early days of railway operation the rate was about 7 1-3 cents per mile per ton, and it has been steadily reduced until now it approximates 7 mills per ton mile. Water rates are still lower, as is evidenced by the fact that it costs less to transport a bushel of wheat from New York to Liverpool, 3,100 miles by steamship, than it costs to haul the bushel of wheat from the farm to the neighboring station, 9 miles away.

Through improved roads and motor vehicles the farm produce can be hauled at a cost of 5 to 10 cents per ton mile, as compared with 23 cents at present, and under the most improved conditions this cost has been reduced in California to 2 cents per ton mile.

Benefits To Be Gained.

The transformation brought about by the substitution of a good road for a bad road in a community is little short of marvelous. First, the value of every acre of land along the road increases. Director Page says he has never known the increase to be less than 20 per cent, and that he has known it to be 900 per cent.

An investigation into the school system, in five states, revealed the fact that where there were bad roads the school attendance was 59 out of 100 pupils, while in five states, having uniformly good roads, the attendance was 78 out of a possible 100. The same reckoning applies to the churches, the local business of the physician, the store merchant, the farmer and entire industrial community.

Good Roads an Investment, Not an Expenditure.

James H. McDonald, the "father of the good roads movement," asserted money used for the improvement and construction of highways is an investment, not an expenditure. He says the question of improved highways sits closer to the fireside of the home in these United States than anything else, because it gave new opportunities to the farmer and his children, to the settlers in districts removed somewhat from the centers of population. He contended that the states had a right, however, to spend the money they appropriated for highways, without interference from anybody, disagreeing with propositions advanced in the congress by other speakers that the Federal Government should step in and direct the disbursement of these funds in lending aid to the general scheme of better highways. Local prejudice and political influence must be removed before the work of improvement could reach any appreciable proportions, and said that all but eight of the forty-nine states were now enlisted in the movement.

H. W. Anderson declared that convict labor should be done away with in the shops of the prisons, except with long term prisoners, and those in the Federal institutions be put to work on the national roads, the state prisoners on the state highways, the county on the local thoroughfares and the city prisoners on the outlying streets. He recommended the taxation of the automobile according to its horsepower, other vehicles commensurate with their weight, both of the conveyance itself and its load; also with reference to the width of their tires and wheels. Speed fiends, he asserted, played havoc with good roads and should be taxed accordingly.

The French Way.

Engineer Pulligny, of France, said in part: "France possesses a network of public highways as remarkable by reason of its vast extent as by the good condition of the roads as a whole. These highways are divided into seven classes: National roads, departmental roads, main traffic roads, roads of common interest, ordinary local roads, county roads and streets.

"The first two classes constitute the main roads and the five others the lesser roads. The departmental roads are gradually being absorbed into the main traffic roads. Since the national roads are the property of the state, their classification is vested in the state, and, when they are declared to be of public utility by a decree of the council of state, they are established and maintained at the expense of the Federal treasury."

Frank D. Lyon advocated a national department of highways, and suggested that a cabinet officer be made the head of the new department and that he or his agents go into every state and carry on a campaign looking toward the establishment of road departments under certain prescribed rules, to fit the particular needs of the jurisdiction invaded by the adoption of which Federal aid would be forthcoming commensurate with the condition of the roads of that particular state.

By the allowance of so much per mile per year from the Federal Government, states already having good roads would have a surplus after paying for the maintenance of their roads, to open up new highways, while those which have bad highways would have the funds necessary for the construction of better highways, and in the succeeding years, money to maintain them in proper shape.

Dr. Joseph Hyde Pratt declared "that the fine highways in Europe made every point of interest accessible to visitors, except a few remote points in Russia, Norway and Sweden, but in America very few roads were developed that were traversed on account of the scenery or of historical interest. The construction of highways leading from the main arteries of railroad systems, would not only keep thousands, who usually go to Europe, for sightseeing in this country, to view the wonders of the United States, but bring other thousands from other shores to visit scenes of historic value."

National Prosperity Depends on Roads.

Dell M. Potter said: "The view the United States Government has taken in the development of its highway systems has driven from 25,000 to 40,000 of its best citizens out of this country annually for the past five years, because of the refusal to build good roads through the sections in which they have settled. The prosperity of this country depends on the establishment of national highways, quoting statistics to prove that but half the acreage of farm land is cultivated, because of the poor road facilities. This country will never produce as it should until good highways are constructed." His plan of a national highway is one to traverse New York, New Jersey, Delaware, Maryland, Pennsylvania, West Virginia, Ohio, Illinois, Indiana, Missouri, Kansas, Colorado, New Mexico, Arizona and California, by which the Federal Government would take the roads already built under control, and give the state in which these highways were located credit in a monetary way, and in turn give the state money to improve its other highways.

He declared that this route had been selected because three-fourths of the wealth of the country lies along its direction, together with 40 per cent of the population of this country. This would not only attract prosperity from travel, but would give moneyed men from other states opportunity to see chances for investment and development overlooked by the residents of the particular state, which would all tend to increase the general prosperity of the country."

Postoffice Department Interested.

Assistant Postmaster General P. V. De Grand said: "That the Postoffice Department should be interested in the building and improvement of the highways throughout the country is but natural when consideration is given to the fact that many millions of dollars are expended annually in the maintenance of the rural mail service, and that during the course of a year rural and star carriers travel the enormous distance of nearly 400,000,000 miles of roads.

"In many instances postmasters and rural carriers have taken the initiative in forming good roads associations whereby vast sums have been provided for the improvement of the entire system of highways in different localities. In numerous other instances the postal employes have arranged for and held through the countries in which they reside series of good road meetings."

A law was suggested, taxing corporations or owners of industrial plants, collieries, mines, etc., for an important part of the contributions for the maintenance of the roads leading from their plants, where the wear and tear of traffic is more damaging than that of the people of the community.

The National Highways Association estimates that more than $25,000,000,000 will be spent in the next twenty-five years on the 2,300,000 miles of highways in the United States. This association is pushing the project for the Federal Government to build and maintain 50,000 miles.

The proposed Quebec-Miami international highway, if built, would be 2,500 miles long, running through Montreal, Plattsburgh, Glens Falls, Saratoga Springs, Albany, Troy, New York City, N. Y., Trenton, Philadelphia, Wilmington, Elkton, Baltimore, Washington, Richmond, Petersburgh, Boydton, Va., Durham, Raleigh and Pinehurst, N. C., Columbia, S. C., Augusta and Savannah, Ga., Jacksonville, St. Augustine, Daytona and Palm Beach to Miami. It is proposed to have the road completed by the end of 1914.

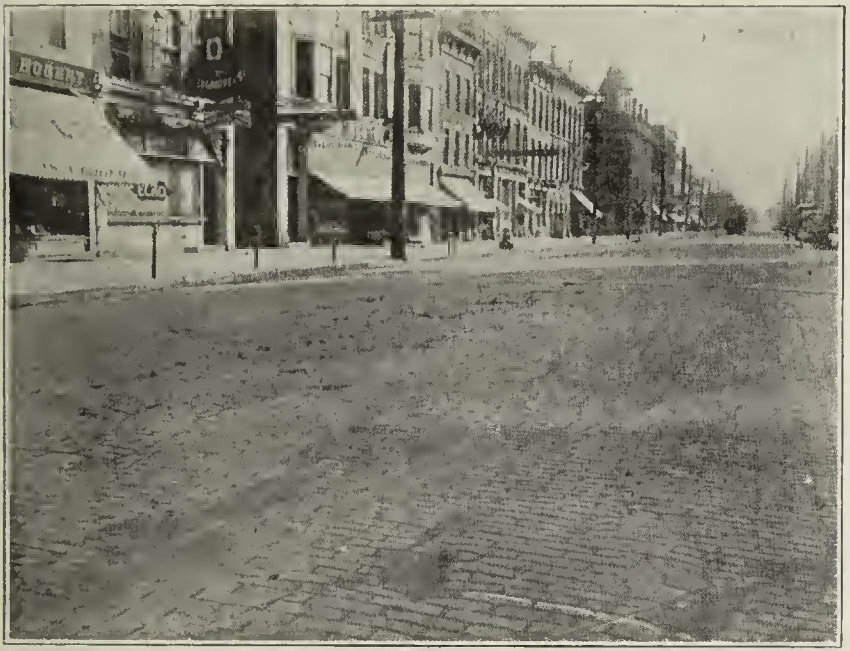
N. P. B. M. A. Exhibit.

The National Paving Brick Manufacturers' Association, with office in Cleveland, Ohio, had a very comprehensive exhibit, in charge of H. H. McDonald, assistant secretary, showing the advantages of brick pavement. One exhibit which forcibly told the story was a section of a brick pavement which was laid eighteen years ago at Sandusky, Ohio, and was, to all appearances, good for eighteen years more. Some of the points brought out by Assistant Secretary McDonald were as follows: "In Cleveland and vicinity, 1,000 miles of brick pavement have been laid, and this year 100 miles more are being laid. In the western part of New York state there are 300 miles of good brick pavements, as well as many miles in Newark, N. J., various parts of Pennsylvania and other points throughout the East. The aim of the association is to bring about the proper construction of brick pavements and to assist municipalities in arriving at a proper solution of their paving difficulties, as well as to advise the engineer and assist in settling knotty problems and to further this work, gladly furnishes specifications free to any city.

"Vitrified paving brick has been in use in this country more than thirty-five years, and under the approved methods of today its use has grown in favor until it is universally recognized as a necessary factor in civilization. The brick made by different manufacturers are not alike, owing to the fact that no two deposits of shales or clays are exactly alike, hence do vary in color and require different methods of treatment and burning to bring them into the best condition for practical use.

"The brick pavement is sanitary in every way, affords perfect drainage, is clean and dry, and originates no dust in itself. It provides sure footing for horses and eliminates skidding, and it is practically impossible to overload a team of horses on a vitrified brick pavement.

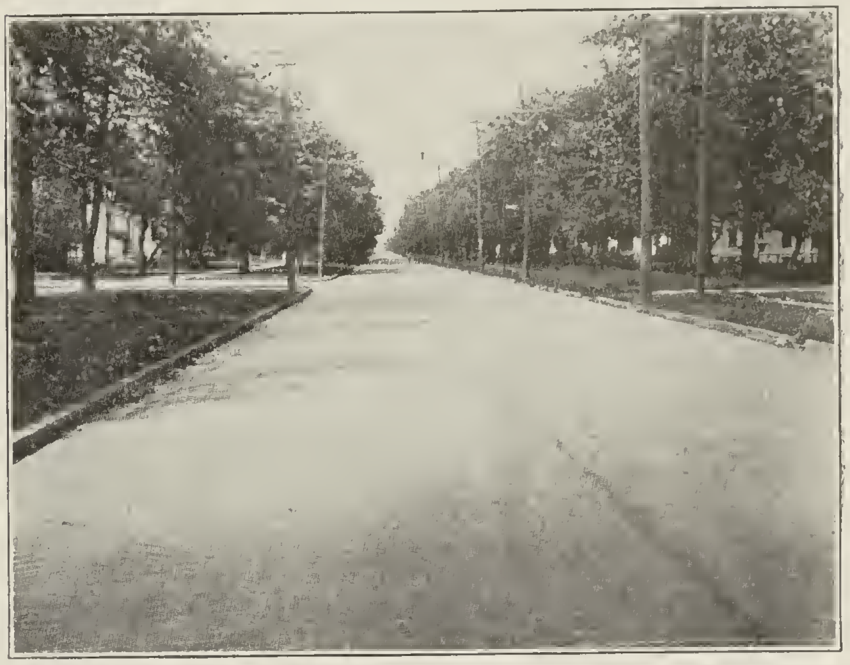
"One of the great problems of the day is the up keep or maintenance of pavements, but when the vitrified brick pavement is properly laid the maintenance problem amounts to practically nothing. A brick pavement adds to the beauty of the neighborhood, and its smooth, even surface, reduces noise to a minimum. Brick has no oiled or tarry top surface to soften in the heat of summer, to emulsify with waste or foreign matter, nor does it reflect and intensify the heat, disintegrate by low temperature or evaporate in high temperature, but is permanent and intact at all times. It is easier to repair a cut or an opening in a brick pavement than in any other pavement, and requires no special set of tools. A brick paved street grows better with age, as the constant traffic effects a wear that tends to make the surface more even. There is no better pavement for the country highways, as it eliminates dust, repair and maintenance.



Market Street, Sandusky, Ohio. Paved in 1894 with the Same Character of Brick as Those Used on Columbus Avenue. The Difference in Wearing Quality of the Pavement is Due to Defective Construction.

"Heavier loads can be hauled on brick highways than when paved with other materials. There are no bumps and ruts and very little wear on tires. These roads have a year around value, and are always in shape. No pavement is so easily flushed or dries up so quickly as the cement filled brick. Adhesion of dirt is impossible and waste does not occur. Heavy street car traffic does not affect it in the least when laid between the rails. Brick roads are the most economical, as is shown by the fact that the repairs on some highways have averaged $300 to $600 a mile where other materials were used. Some brick pavements in New York have been laid twenty years and had practically no repairs in that time, and are good for fifty years more. Brick for the paving of bridges and viaducts has been found to be the most durable that could be laid. The width of a brick pavement can be made suitable to the needs of any community. Special hillside brick are recommended where the grade is more than 5 per cent."

Individual exhibits of paving brick were made by the following manufacturers: The C. P. Mayer Brick Co., Bridgeville, Pa.; the Trimble Brick Manufacturing Co., Trimble, Ohio; the Denny-Renton Clay & Coal Co., Seattle, Wash.; the Barr Clay Co., Streator, Ill.; the Alliance Brick Co., Alliance, Ohio; the Deckman-Duty Brick Co., Cleveland, Ohio; the Peebles Brick Co., Portsmouth, Ohio; the Thornton Fire Brick Co., Clarksburg, W. Va.; the Bessemer Limestone Co., Youngstown, Ohio; the Metropolitan Paving Brick Co., Canton, Ohio; the McAvoy Vitrified Paving & Brick Co., Philadelphia; the Brick, Terra Cotta & Tile Co., Corning, N. Y.; the Nelsonville Brick Co., Nelsonville, Ohio; the United Brick Co., Greensburg, Pa.; the Athens Brick Co., Athens, Ohio; the American Sewer Pipe Co., Akron, Ohio; the Marion Brick Works, Montezuma, Ind.; the Indiana Paving Brick & Block Co., Indianapolis, Ind.; the Cleveland Brick & Clay Co., Cleveland, Ohio; the Alton Brick Co., Alton, Ill.; the Shawmut Paving Brick Co., Shawmut, Pa.; the Westport Paving Brick Co., Baltimore, Md.; the T. B. Townsend Brick Co., Zanesville, Ohio; the Corry Brick & Tile Co., Corry, Pa.; the Danville Brick Co., Danville, Ill.; the Cleveland Vitrified Brick Co., Oklahoma City, Okla.; the Murphysboro Paving Brick Co., East St. Louis, Ill.; the Copeland-Inglis Shale Brick Co., Birmingham, Ala.; and the Wassall Brick Co., Glouster, Ohio.



Columbus Avenue, Sandusky, Ohio. One Mile in Length, All of Which is Just as Smooth as the Section Photographed. Laid in 1894—Eighteen Years in Service Without Any Cost for Repairs.

The New York State Highway Commission had an exhibit of a brick pavement, with a five-inch concrete foundation, sand cushion, pitch expansion cushion and concrete edging, the latter used where there is no combination.

The American Steel & Wire Co. had an exhibit of a grout filled brick pavement laid on a concrete base.

Mr. McDonald spoke well of the brick pavements laid in Atlantic City, and stated that they were especially well grouted. He said they were well constructed and showed that excellent work had been done. Several of the streets leading to the famous boardwalk are brick paved, and there is talk of using considerable brick in the future instead of so much macadam.

The plant of the Catskill (N. Y.) Paving Brick Co. has been purchased by a new company with a capital stock of $300,000. Chas. M. Crooks of Youngstown, O., will move to Catskill and look after the reconstructing and re-equipping of the plant for the making of vitrified paving brick. A tall smokestack will be built, thus doing away with the smoke nuisance.

BRICK FIGURE IN CENTENNIAL OF MADISON COUNTY, ILLINOIS.

Good Roads Day is Part of Celebration, and the City With Miles of Paved Thoroughfares is Pointed to as Object Lesson by Hard Road Advocates.

The most striking feature of the week's celebration of the centennial of Madison County, Illinois, at Edwardsville, which closed September 21, was the last day's session, which was devoted exclusively to the discussion of good roads.

Inasmuch as Edwardsville's streets are, with few exceptions, paved with vitrified brick, and the miles of permanent pavement have been put in within the last decade, the several thousand farmers and tax payers, of not only that county but of adjoining counties, were given a most excellent lesson to take home with them.

The attendance probably was the largest that ever attended a good roads meeting in Illinois and while the program of the day was open to adherents of all forms of paving the speakers were almost unanimous in favoring vitrified brick.

Edwardsville, according to the last census, is a city of only 5,000, yet it has more than fifteen miles of paved streets, practically all of which are of vitrified brick. The citizens profited by the experience of other communities and avoiding costly experiments, started right.

C. W. Terry, of the law firm of Terry and Gueltig, and one of the most enthusiastic exponents of vitrified paving block, is largely responsible for this condition for he has urged his neighbors to use the most permanent material they could find and end the incessant repair bills. Morning, noon and night he has talked brick and his labors have not been without results as the paved streets of the little city, today, show.

Mr. Terry also presided at the good roads meeting and took an active part in the day's proceedings. To a "Brick and Clay Record" representative, he outlined briefly the history of Edwardsville's fight for good paving.

"We experimented with macadam, asphalt and macadam, one-course concrete and two-course concrete, but these proved unsatisfactory," said Mr. Terry. "We determined that brick was the proper material to use and we have used it ever since.

"All our brick streets are laid on not less than five inches of concrete, one-three-five mixture, and the brick are, as a rule, Banner block. Some of these have been down eight years and show absolutely no wear. We also have used Purington, Albion, Veedersburg and Alton brick with satisfaction.

"I have paid out $15,000 for brick streets in front of my own property—probably three times more than any other individual here, and I am satisfied that the increase in valuation of the property has been at least three-fold. I did this because I wanted something permanent and economical.

"It has reached the point in Edwardsville where the people themselves are petitioning to have brick streets built, where, only a few years ago, our Mayor, H. P. Hotz, who has been elected five successive times, was almost universally condemned when he first advocated the use of this material. The argument then was made that he was trying to bankrupt the city.

"In this connection it may be stated that last spring when I brought the matter of special tax for hard roads to a vote the same people who had first argued that brick was too expensive for our town opposed the special tax on the ground that it was impracticable to use macadam, and that they would be in favor of the movement if they could be assured that we would use brick on country roads.

"My partner, Mr. Gueltig, has been corporation counsel during the entire construction period and has led the fight, together with a few others, in favor of brick. In the early history of our work we threshed out the question in a three weeks' hearing before the Court as to the use of concrete and brick as against any other kind of construction; and the sentiment, while then divided, was largely in favor of the artificial curb, concrete base and brick with cement grout.

"Two or three hundred witnesses were examined, both expert and lay, tax payers and non-tax payers, constructionists and 'Knockers;' and this hearing decided, once and for all, that where there is considerable traffic, the above construction is the only economical construction, at least in cities of the size of Edwardsville, worthy of consideration.

"Edwardsville wisely did not limit the first contract to a paving 'around the square' or two or three blocks, but instead the first contract was for paving about a mile and a half of our streets. This, in my judgment, largely accounts for the comprehensive scope of our paving and for the fact that, in eight years, we have all the principal streets paved to the city limits, and many of the cross streets. Edwardsville has now the reputation of being one of the prettiest and most attractive and desirable residence cities in the country.

"My heart is in the Good Roads Movement, as there is no question but that its importance overshadows by far the money question, the tariff question or any other of the supposed great questions pending before the people. I am ready to make speeches whenever I can find the time to do so. I have often wished that I were wealthy enough to enable me to put in all my time on this movement."

State Senator Edmund Beall was introduced as the first speaker at the meeting. The senator is another hard roads man and he told of the work on the streets in Alton, while he was serving as mayor of that city.

State Road Engineer A. N. Johnson of Springfield, was the next speaker. His talk was replete with arguments in favor of hard roads in Illinois.

Eben Rogers, of Alton, followed. He gave an illustrated lecture on the subject of vitrified paving brick, first reading a speech which had been delivered by R. C. Penfield, president of the American Clay Machinery Co., at New Orleans some time ago. This address tells of the many miles of hard roads which have been built in Northern Ohio, and of the substance of which they are constructed. The motion pictures shown gave the audience a clear idea as to the process of the manufacturing of paving brick.

Homer J. Tice, of Greenview, Ill., was the next speaker. Mr. Tice is chairman of the legislative committee to make recommendations on new road laws for the state. His address was most interesting and filled with data calculated to conclusively prove that the project of making all the main roads in Illinois hard, is not only feasible, but such roads would be an actual saving to the people.

The Central Clay Products Co., of North Tonawanda, N. Y., will build a large paving and building brick plant, which will be a model of its kind ,with electric power. The C. W. Raymond Co., of Dayton, O., has been awarded the contract for furnishing a complete machinery equipment for the plant.

A NEW MEMORIAL TO LINCOLN

Appropriation of $250,000 Well Expended in Lasting Monument of Burned Clay Which Will be a Benefit to Future Generations

By WARFIELD WEBB

HISTORY has proven that one of the most effective and lasting methods of keeping alive the memory of a great man is to erect in his memory a monument, either as a simple shaft in the form of a memento, or better still, the construction of a building which bears his name and stands as a lasting monument, continually heralding his name and fame. This was the underlying idea involved in the conception and execution of the just completed Lincoln Hall, at the University of Illinois, Urbana, Ill.

When the Illinois State Legislature appropriated a fund of $250,000 for the erection of the building, the act met with universal approval. The location of the hall on the campus is to mark the beginning of a larger scheme that will be carried out at a later date, that was evolved by Messrs. D. H. Burnam, Chicago; C. H. Blackhall, Boston, both architects of wide reputation; Professor Mann and Professor White, of the University of Illinois, and the architect of the present building, Mr. W. Carbys Zimmerman, of Chicago.

The building is three stories high, 230 by 126-10 feet in size, L shape, faced with dark red pressed brick with gray architectural terra cotta trimmings. The brick were furnished by the Western Brick Co., of Danville, Ill., and the terra cotta was manufactured by the American Terra Cotta & Ceramic Co., Chicago. The style of architecture is plain and dignified and, while simple in its outlines, the structure has an imposing appearance and its simple dignity makes it especially appropriate in commemorating the life of Lincoln. It will be used for the executive offices of the university and for recitation rooms, of which there are eighty.

Aside from these rooms the most imposing feature of the interior is the spacious main lobby, 26 x 40 feet. This portion of the structure has marble floors and green Vermont marble walls.

The building has been made strictly fireproof, with arched fireproofed floors, fireproof partitions, all of the best materials procurable. It has been the endeavor to build a structure that will long withstand the ravages of time and be a lasting memento to the glory of the state and its most noble son.

Life Story Told in Terra Cotta.

One of the most notable features, because of the significance of the work and the story it tells in picture of the principal events in the life of our great martyr-hero-president, are the panels of gray terra cotta, whereon is written the life history of the great Lincoln. Portraits are also shown of twenty of the historic men who were his compatriots and who assisted him in the great work that stands out today as a master achievement.

These wonderful terra cotta panels, ten in number, were the work of Karl Schneider, the chief sculptor at the American Terra Cotta & Ceramic Co.'s plant, Terra Cotta, Ill. Truly it can be said that Mr. Schneider has achieved a work of more than ordinary merit in these historic panels. He took the simple events in the life of Lincoln and wove them into a story in burned clay that will live when its author and creator has long been forgotten.

New Abraham Lincoln Hall at University of Illinois, Urbana—a Splendid Memorial in Burned Clay.

This history in burned clay, as it stands today, was a labor that demanded more than ordinary power, not alone as an artist, but likewise as an author who could gather the fragments, more from hearsay than from books, and piece together into a perfect whole, the story as we know it. There still live men who knew Lincoln and from these we gather the stories that we love to hear of the great emancipator. Mr. Schneider tells us the story simply as we prefer to hear it and on account of its great simplicity it appeals to us all the more strongly.

The labor was arduous, demanding time, patient study, delving into history and personal interviewing in the gathering of data from divers sources. In this way alone was the artist able to give to the world this latest and newest and all-powerful tale for the youth of coming generations to study and profit thereby.

Description of the Panels.

These panels are located between the windows of the second and third floors, facing the front of the structure. On either side of the panels are the portraits of the men whose names were linked with that of Lincoln. The panels, three feet high by nine feet long, are in gray terra cotta, and the portraits, larger than life size, are of white terra cotta. The portraits, as well as the figures in the panels, were copied from photographs which were most difficult to secure, and those who know say that the likenesses are especially good.

Lobby of Lincoln Memorial Building, University of Illinois.

The first panel showing him as the "rail-splitter" gives us a very clear idea of the rugged character of Lincoln and foretells in words unspoken the manhood and vigor that were lying dormant in that great muscular frame.

The next panel shows him as a river boatman, his face being thoughtful and strong.

Next we see Lincoln as the lawyer. He has begun his rise to the heights. He has become a circuit rider. He has begun to feel that power within him that was to be his might in the hour of need. He is undertaking to defend a poor widow and wins the case.

In panel four he has entered politics. The famous Lincoln-Douglas debate, held at Freeport, Ill., is the subject.

In panel five he has attained the heights to which he was destined. He is delivering his first inaugural address. Here we find such men as President Buchanan and Chief Justice Taney and Edwin Baker. He proves his power and he stands as a man of, for and by the people and he is the people's choice.

A call to arms is the subject of the sixth panel. "We Are Coming, Father Abraham, One Hundred Thousand Strong." The people have heard the call to defend the Union. This is one of the two panels in which Lincoln's figure fails to appear.

In the seventh panel are shown the savior and the saved. Lincoln stands as the great emancipator and the lover of human kind. This panel tells the real story of his life and love for those in need of assistance.

Panel eight brings us to the scene on the battlefield of Gettysburg. One can almost hear the words of praise for the heroes of battle as we see Lincoln standing before the war-scarred veterans, and though he was not one of them, his heart and soul were with them.

The Surrender of Appomattox Courthouse is the ninth panel. It is the scene of the climax in the great struggle that had waged for four long years. Lincoln is there only in spirit and we can readily imagine with what feelings of gratitude he heard of the final surrender.

The last of the ten panels shows "The Soldier's Return." The cruel war is over at last, the labors of the hero-martyr are ended and the newly ploughed field speaks of peaceful days without the horror of war and bloodshed.

What a history and what a story preserved in burned clay of the labors and achievements of this man who has done so much for the world, and the story, thus depicted, will ever live and be a continual reminder of the greatness of our immortal Lincoln. The noted men whose portraits are reproduced in the panels, include: Henry M. Stanton, Horace Greeley, Richard Oglesby, Richard Yates, William H. Seward, Admiral Farragut, Stephen A. Douglas, Charles Francis Adams, Samuel Chase, Lyman Trumbull, General John A. Logan, General Grant, Charles Sumner, Gideon Wells, Judge Davis, Governor Palmer, Joseph Medill, Koerner, Turner and Owen Lovejoy.

The contract for the memorial building was let to English Bros., Champaign, Ill., and while the work of completing it required two years it is an achievement of which all Illinoisians may feel proud and it is a fitting memory to the bravest and noblest of Illinois' sons, whose merit and greatness is appreciated more and more as the years pass.

PROBE TWO DEATHS IN CONCRETE FAILURE.

Kansas City, Mo., Coroner Investigates Fatal Accident Charged to Poor Cement in New Hotel that Collapsed.

A thorough investigation is being made as to the cause of the recent collapse of the new Alameda Hotel on Twelfth Street, Kansas City, Mo., which caused the death of two persons and the serious injury of five others. The building, which was of reinforced concrete, collapsed suddenly while a number of persons were at work thereon. S. R. Crane, of the Southwestern Wire & Iron Works, a concrete and street engineer, formerly in the city engineer's office, blames poor concrete for the fatal accident.

Said Mr. Crane in an interview: "What convinced me the concrete was rotten was the ease with which we drilled holes in it while doing our work. We drilled holes in ten minutes that would take from twenty to thirty minutes to drill in good concrete. I can take a cold chisel and knock chunks out of the concrete in the hotel.

"Another thing that proves this is the cause of the wreckage of the building. The iron rods around which the concrete was set are hanging down like willows, the concrete stripped from them.

"I believe in this case the concrete was mixed too dry and the rock was too large and porous. In the talk about the forms being removed too soon, I have not much confidence. It wasn't 'green' concrete that caused the collapse; it was rotten concrete."

Concrete Unfit for Tension Zone.

In an article on "The Hollow-Tile Fireproof House" in "Architecture and Building," Frederick Squires says: "The concrete above the neutral axis, that in compression, is doing what it is physically best qualified to do, namely providing compressive strength; but the concrete, in the tension zone, is quite unfitted for any job except to tie the reinforcing steel into its harness."

CLAYS IN SOUTHEAST OFFER BIG FIELD

Proportion of Clay Products Small in Comparison to Population—Large Deposits of Valuable Clays Await Development

THE remarkable growth and development of the railroads of our country present a striking example of the results of aggressive advertising, for much of the huge business carried on by them is of their own creation as the result of the work of their advertising departments.

The remarkable part about railroad advertising, is that it benefits others before any returns are realized. In the growth of our western states and territories, the railroads were the pioneers and blazed the trail through barren lands infested by Indians.

Interior of Silica Mines at Iuka, Miss.—the 50-ft. Deposit Extends Over a Large Area.

The Southern Railway, in its work of developing the Southeastern states, has used most progressive measures and has made liberal use of handsome booklets, one, recently issued, being devoted exclusively to exploiting the clays of the states of Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee and Kentucky.

The booklet is well gotten up, the decorative feature of the cover being a handsome brick house with tile roof, and contains so much of interest that we take pleasure in publishing a portion of it as follows:

"The mining of clays and the manufacture of clay products in this country are enormous industries, the volume and distribution of which are but little known to the American public. According to statistics published by the U. S. Geological Survey, the value of the brick and tile manufactured in the United States in the year 1910 was $136,331,396, while the value of the pottery products for the same year was $33,784,678, making the total value of clay products for that year $170,115,974, as compared with $153,407,000, which is the combined value of gold and silver mined in the United States for 1910.

"It should also be interesting to know that of the total population of the United States for 1910, the population of the nine Southeastern States, including Virginia, North Carolina, South Carolina, Florida, Alabama, Mississippi, Tennessee and Kentucky, which are traversed by the Southern Railway, was a little more than 19 per cent. As compared with this percentage of the total population, the total value of the brick and tile manufactured in these nine States for 1910 was only 8.38 per cent of that produced in the United States, and the total value of the pottery products was only 1.46 per cent of that produced in the United States for that year.

"Figures show that, based on percentage of population, the Southern States are producing less than half the brick and tile they should be producing, and only about 8 per cent of the pottery products, all of which are of the red earthenware grade. These facts might sound reasonable enough were not all the conditions favorable to a much larger production of this class of material now existing in the South.

Brick and Tile.

"Considering first the general subject of brick and tile, under which is included common brick, vitrified brick, front brick, ornamental brick, sewer pipe, architectural terra cotta, fire brick, fireproofing, drain tile, roofing tile, stove lining and miscellaneous products, perhaps the first question that would be asked by the prospective manufacturer would be in regard to market conditions. The wonderful progress that is now being made in the growth of Southern cities and towns necessarily demands a large amount of structural material for factories, warehouses, offices, hotels and residences, besides street and road paving, sewer pipes, etc. Much of the front brick, ornamental brick, vitrified brick, building tile, sewer pipe and roofing tile now being consumed in structural work in the South is manufactured in the North. This is largely due to a lack of knowledge concerning the market conditions and natural resources of this territory.

A Revolution in Building Materials.

"It has been stated that the United States is the only highly-civilized nation in the world which lives largely in wooden houses. This condition is first due to the precedent established by our pioneer forefathers, who found the timbers from our boundless forests to be the cheapest and most accessible building material. In fact, until recent years, in the Southeast States, the first cost of a wooden house has been much less than the cost of the same house constructed of brick—and it is the first cost that has always appealed to the man of moderate

Showing Method of Mining Residual Kaolin in North Carolina.

means. It has also been estimated by an experienced builder that out of every 1,000 prospective home-builders, 950 would use wood without a second thought. These conditions are rapidly changing, however, as our forests are receding from civilization and wood is no longer cheap. There is today in America, and particularly in the Southern States, a revolution in building materials. The young American who now contemplates the building of his own home has the advantage of considering the cost, appearance, efficiency, durability and fire-proofing qualities of several available building materials. When he considers, then, that of all types of construction, the brick is the most beautiful, that it does not decay or depreciate with age, but grows more picturesque, that it is not only fireproof but also requires no painting and that it only costs about 10 per cent more than a frame house and has a lower rate of insurance, it does not take him long to make up his mind that as an investment the brick or tile constructed house is more economical in the end and always more salable.

The Good Roads Movement.

"As an example of the progress that is being made in the South, during the past eighteen months $22,000,000 has been appropriated for the construction of good roads by bond issues ranging from $50,000 to $400,000 by counties. From May 1 to November 1, 1911, the Southern Railway Company ran a good roads train over 13,500 miles of rail, stopping at 250 towns which were located in 201 counties, and giving instruction in the art of building good roads to 50,000 people. This train was equipped with road models built of various materials, stone crushing and road building machinery. The lecturers accompanying this train were from the U. S. Office of Public Roads, and the train was hauled by the Southern Railway Company without charge to the government or to the people.

"The expenditure of this large sum on public highways and the consequent improvement in rural conditions will undoubtedly require a large quantity of sewer pipe for culverts and drainage purposes.

"The South is the most natural market for roofing tile, as this material acts as a good heat insulator and is especially suited to the style of architecture most favored in warmer climates. In spite of this fact, there are not more than two plants in the South which manufacture this class of material, and in hundreds of cases where the builders would prefer to use roofing tile, the remoteness of the source of supply prevents its being considered.

Silo Epidemic Possible.

"Beginning January 29, 1912, the Southern Railway started a dairy instruction car on a sweeping tour of its entire system. This car is equipped with the necessary machinery and apparatus for a farm dairy, and is accompanied by several competent instructors who will make practical demonstrations and give illustrated lectures at every stop. This car is run for the purpose of building up the dairy industry in the South, and one of the things that will be strongly advocated is the building of silos. Undoubtedly there are fewer silos in the South than in any other part of the United States, and it is reasonable to suppose, judging from the results following the good roads demonstration, that the South will from now on have a silo epidemic. If the manufacturers of silo tiling wish to compete in this new market, it will be necessary that the tiling be manufactured in the South, as the long haul from other points would make their use prohibitive. On account of the dry summers in the South, the wood silo is especially impracticable.

"Another great opportunity for a common clay product now offered by the South is in the manufacture of drain tile. There is scarcely a farm in the Piedmont or Tidewater sections of the South, that has not a few acres of poorly drained, sour land which can be made available for cultivation if properly underlaid with drain tile. As this ground is generally bottom land, it is often very fertile, and hundreds of farmers would be glad to recover so many good acres could they obtain for a reasonable price the necessary tiling. Besides this constant demand for drain tile, statistics published by the United States Department of Commerce and Labor show that there are approximately 74,541,700 acres of swamp and overflow lands in the United States, of which 33,821,000 acres are within the boundaries of our Southern States. Much attention is being given at present by both the United States and State departments of agriculture to the reclamation of these swamp lands, and nothing is more essential to the progress of this great work than an abundant supply of drain tile available at a reasonable price. On account of excessive freight rates, it is necessary that drain tile be made near the point where it is to be used, and the South offers many opportunities in this line

"The rapid development of the coal and iron fields of the Southern Appalachians is necessarily followed by the construction of the furnaces, foundries, steel mills and coke ovens, all of which require the best grade of fire brick, and the South is not manufacturing a sufficient amount to meet even the present demand.

Large Clay and Shale Deposits

"Next in importance to this growing demand for clay products is the available supply of white, buff, and red-burning clays and shales. The coastal plain area of the Atlantic and Gulf States is made up entirely of beds of sand and gravel marls and sedimentary clays. These clays vary in color after burning from white to buff red, and are well adapted to the manufacture of almost every variety of brick and tile. In the Piedmont and mountain sections of the Southern States are extensive deposits of residual and alluvial clays, the more important being distributed along the river bottoms and terraces.

"The shales of North Georgia and Alabama, East Tennessee, Southwest Virginia, Southern Illinois and Indiana are particularly adapted to the manufacture of paving and vitrified brick, sewer pipe, hollow tile and roofing tile. In brief, there are few, if any, localities in the South where, if all other conditions are favorable for clay products manufacture, suitable clays or shales cannot be found.

The Use of Shales.

"The use of shales in the manufacture of clay products is practically a new industry in the South, though it has long been practical in other states. For small plants which only require a limited amount of material, the local deposits of residual and sedimentary clays are often perfectly satisfactory. For the larger industries, however, it has been found that shale is generally more desirable on account of its uniformity of composition and the great thickness of the beds. Although it necessitates the additional expense of pulverizing, there is no danger of the shale giving out or of variation in chemical and physical properties, and these factors are most essential to the establishment of a large plant.

"The well-known fact that there are no large potteries in the Southern States makes this area a large and almost non-competitive market, besides being of easy access by rail to the great Southwest territory and by water to the Atlantic coast ports, and eventually by way of Panama, to the Pacific coast.

"The raw materials, such as kaolin or porcelain clay, ball clay, stoneware clay, slip clay, sagger clay, feldspar and silica, consumed in the manufacture of the various grades of pottery, occur in workable deposits in the South.

"In South Carolina are remarkable deposits of so-called sedimentary kaolin in Aiken, Lexington, Richland and Kershaw counties, which challenge comparison with any other known beds of similar character. They are white burning clays and afford an average of 98 per cent clay substance, requiring no other preparation than drying. The beds are practically horizontal and vary in thickness from 5 to 20 feet. They have a variable over-burden of eocene and neocene clays and sands, and in a number of places are exposed by erosion. The Savannah River area contains one of the most remarkable deposits of sedimentary kaolin in the United States, both in relation to its quality and quantity. From Hamburg to Aiken is a zone of these clays extending 14 miles in length by 5 miles in width. These are by far the most important pottery clays in South Carolina, as there has been no development in residual porcelain clays.

Valuable Residual Kaolin Mine of Harris Clay Co., Dillsboro, N. C.

"The Georgia clays were known in England as early as 1766, and were used by Wedgewood in his pottery. The most important pottery clays in Georgia belong to the Potomac group of the cretaceous clays which are exposed along the fall line from Augusta to Columbus, reaching considerable thickness in places and in character resembling the sedimentary kaolins of South Carolina mentioned above. About 25,000 tons of this clay are mined annually, the bulk of it being shipped to potteries of New Jersey and Ohio and to the wall paper mills in other States.

"Alabama is well supplied with porcelain, pottery and stoneware clays, which are similar in character and compare favorably with those of Georgia and South Carolina. The pottery clay industry in this State, however, is in its infancy, as it is in all of the other Southern States, on account of its remoteness from a market. Workable deposits of china clay are reported to occur in the following counties: Cherokee, Gadsden, Talladega, DeKalb, Marion and Colbert.

"Tennessee has for some years been a large producer of ball clay, sagger clay and slip clay, the principal deposits thus far discovered being confined to Carroll and Henry counties. The ball clays of Tennessee, Kentucky and Florida now largely replace the English ball clays which have so long been used by the Northern potteries.

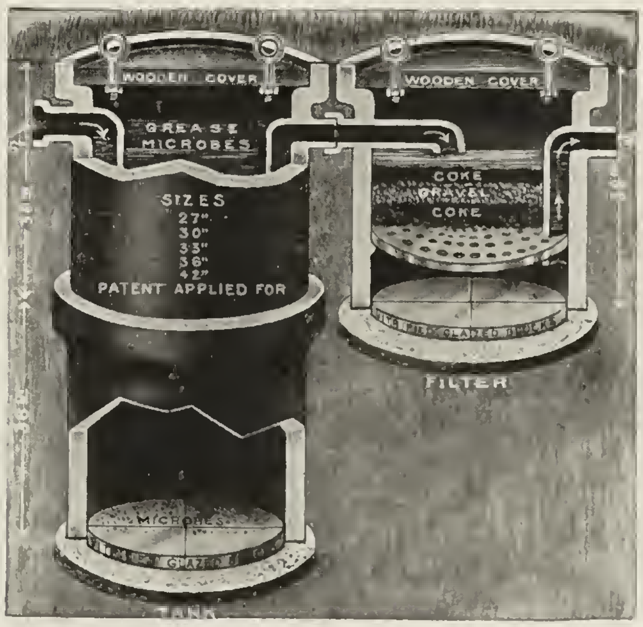
"Quoting Dr. Heinrich Ries' history of the clay-working industry in the United States: 'We thus find that an important mining industry has grown up to develop the deposits of high-grade clays and ship the products to the manufacturers. At the present day New Jersey, North Carolina, Georgia, Tennessee, South Carolina, Florida, Kentucky and Missouri are the most important States in which the clay-mining industry exists.' This shows six Southern States out of the eight as important producers.

"That the supply and distribution of pottery clays and brick and tile clays and shales in the South will satisfy all conditions is unquestionable. That these materials are suitable for the manufacture of almost every variety of clay product has been proven beyond a reasonable doubt. That the fuel supply, market conditions and transportation facilities meet all requirements is an established fact. It only remains, therefore, for parties interested in the promotion and the possible development of the clay-working industries in the South to make a personal investigation and select a suitable location with reference to economic development."

BURNED CLAY SEPTIC TANK

Solves Problem of Sewage Purification for Outlying Buildings and Institutions

A reference to the construction of septic tanks from clay, in the article on "Possibilities in the Clay Industry," in our September 15th issue, has aroused considerable interest, as is evidenced by the many inquiries which we have received from many parts of the United States, and one from Celaya, Mexico. As there is at the present time only one firm engaged in the manufacture of these clay septic tanks, namely the Blackmer & Post Pipe Co., St. Louis, Mo., we believe a description of the tank, as set forth in a booklet issued by that company, will be of interest.



Showing Construction of Vitrified Clay Septic Tank.

The septic tank, designed for the purification of sewage from buildings beyond the zone of trunk sewers, consists of three pieces of vitrified salt glazed sewer pipe of large dimension, as shown in the illustration, which are correctly proportioned to induce the rapid multiplication of the anaerobic germs of "sewer bug" which owe their birth to a process of nature.

Principles of the System.

"The flow of sewage through the tank is interrupted or slowed by the curved pipes, they prevent a disturbance of the sewage in the bottom of the tank or the sludge of grease which forms at the water line, where the anerobes or 'sewer bugs' work. They are the first living product of organic sewage, they feed upon the disease-producing bacteria that are in all raw sewage. The bacteria are forced to fight for existence in the septic tank compartments with two foes—first, the absence of oxygen, which they need badly—just like human beings need fresh air; secondly, the alert anaerobic germs, which thrive in the very condition in which the bacteria are at a loss—absence of air. In the battle which ensues the bacteria are doomed not only to defeat but to death and devourment. By the time the sewage has flowed through the several compartments of the septic tank, the voracious little microbes have eaten up every atom of animal life and every particle of solids that the sewage contained, nothing is left but clear water that is almost chemically pure.

"These facts have all been proven by bacteriological tests, which determined that the number of bacteria entering the tank in raw sewage has been as much as two million to the cubic centimeter (about thirty drops). The water leaving the tanks has been analyzed and found to contain as low as five bacteria to the cubic centimeter (less than the average well water). The percentage of bacterial removal has been over 99.9-10. These results have been verified by different chemical analyses which prove that the system is effective and sanitary.

Epidemics Caused by Vaults and Cess Pools.

"For centuries it has been the custom in small towns that have no water works or sewer systems to leave sewage in vaults or cess pools until it has become a menace to public health by polluting the air, the wells, and the water courses. The diseases directly traceable to this constant defilement are typhoid fever, diphtheria, malignant malaria, scarlet fever and general diarrheal conditions.

"Nearly if not all of the epidemics that so often occur in small unsewered towns, have their origin in the germ-laden air or water from vaults or cess pools. This truth is so well known that for years there has been a general hope that some scientific method of sewage purification would be discovered that would be applicable to the individual house, the public school and the hotel. It seems to have been found in the septic tank and while the septic system is not exactly new, building the tanks with vitrified pipe is new. They have been approved by the Sewer Department of St. Louis as perfect sanitary appliances, and many are in use throughout the country."

AN INTERESTING KENTUCKY PRESSED BRICK PLANT

Up on one of Newport's steep hills, is perched the busy factory of the Newport Pressed Brick & Stone Co., makers of high-grade red pressed brick, which have the distinction of having won medals and diplomas at the St. Louis World's Fair in 1904.

The directors of the Newport Pressed Brick & Stone Co. are Walter Bennett, Edward Raber, W. W. Baxter, L. C. Raber, F. B. Boseman, Geo. Dorne and H. E. Englehart. The officers are Walter Bennett, president; Edward Raber, vice president, and W. W. Baxter, secretary and treasurer.

Portion of the Plant of Newport (Ky.) Pressed Brick & Stone Co.

The plant, which was established in 1902, has for nine years been under the supervision of Mr. Baxter. It has a daily capacity of about 15,000 brick and is operated eleven months of the year.

Trade Principally Local.

Although the trade, which is principally Cincinnatian and local, demands for the most part light red "flash" brick, the company also makes a dark buff "flash" and a medium, besides a fine steel gray, used for trimming, also an unusually attractive "clinker" brick, made by over burning, which produces a handsome mat surface.

All the clays used are taken from the hills directly back of the plant, and are found in alternate layers of blue, red and gray with interspersing layers of stone.

The company recently installed a Frost dry pan, made by the Frost Mfg. Co., at Galesburg, and this pan is declared by Jos. Mefford, the superintendent, to be unexcelled for good service.

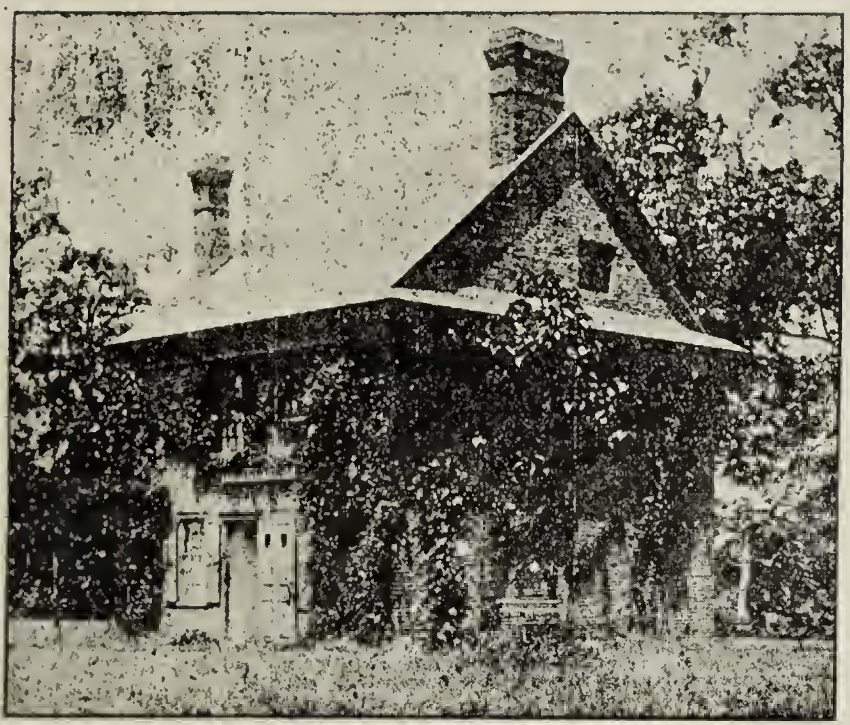
The kiln battery consists of six large down-draft kilns, hard lump coal being used for kiln burning while slack is used for boiler purposes. A ten days' burn is required for the variety of flash brick which the company produces from a mixture of blue and gray or blue and red clay, two-thirds gray and one-third gray or red clay being the proportion used. The dry press process is used, the brick being made on a Chisholm, Boyd & White press, which gives excellent satisfaction.

Good Spring Demand Anticipated.

The company is stocking up its yard in anticipation of a good spring demand.

A singularly interesting fact in connection with this plant, is that while clay is being taken from the hill back of the plant, valuable city property is being made, from what would otherwise be practically useless terra firma. The hill was formerly so steep that dwellings could not be erected thereon, but as a slice of the hill is taken out, a level bit of ground is made and to make a good ending to the story, brick from the plant should be used to erect handsome buildings on the "made" property.

SOME ATTRACTIVE BUSINESS-GETTING ADS.



This brick house built by Wm. Penn 228 years ago. It is located in Fairmont Park, Philadelphia, and is occupied at present. The cut is a reproduction of a photograph taken this month of the building.

What do you suppose would be the difference in repairs on this brick house and a frame house built at the same time?

When you build, use brick.

STANDARD BRICK CO.

Macon, Ga. W. E. Dunwody, President.

POINTS FOR HOME BUILDERS

Contrary to general opinion a brick house costs but little more than a wooden one.

The insurance rate on a wooden house on "The Hill," in a given locality, is 60c per $100. On a brick house with fireproof roof in this same locality the insurance rate would only be 40c per $100.

On a $3,000 house and furniture insured for $1,000 this would mean a saving of $8.00 a year in favor of the brick house.

A wooden house has to be painted every five years at an average cost of about $125.00, or $25.00 per year.

On these two items alone a brick house would mean an annual saving of $33.00, which would pay the interest on $471.00, and go a long way towards paying the slightly increased first cost of a brick house.

Then think of the more beautiful house, which is cooler in Summer, warmer in Winter, no repair bills, and just as valuhble, or more so, years after as the day it was built.

Ask for information:

GEORGIA-CAROLINA BRICK CO.

AUGUSTA, GA.

"When You Build---Use Brick"

NOT A FABLE—IT'S THE TRUTH.

Once there was a man who met with financial reverses and his creditors insisted on his raising some money in a hurry.

He had little outside of his business except his home, and to save a complete wreck he decided to sell the home and rent a suite until he could recover his losses.

He built his home ten years before and it cost him a little more than $15,000 to complete it. He looked over his expense account and found that he had spent nearly $1,300 in painting and repairs on the house during the ten years. He went into the market to sell.

He found a man who wanted to buy a home. The location suited the buyer and the arrangement of the house was satisfactory. The seller thought that inasmuch as the lots in his neighborhood had doubled in price since he built his home he should receive $15,000 for his property.

"But," said the buyer, "it is a frame house and the repair bills will grow bigger and bigger every year. If it was a brick house I would give you more than it cost you and be satisfied, but I will not give you more than $10,000 for the property." The man was hard pressed for money and accepted the $10,000.

Had the man spent less than $1,000 more when he built his home and made it of brick instead of wood he could have sold it for $5,000 more, and would have saved nearly all of the $1,300 expense item. By building of wood he wasted over $5,000. He felt the loss when he most needed cash.

MORAL—Build of brick.

The Cleveland Face Brick Association

Organized for the purpose of advertising, developing and promoting the increased use of face brick.

THE
STOWE-FULLER COMPANY,
12th Floor Rockefeller Bldg.

THE CUYAHOGA BUILDERS'
SUPPLY CO.,
6th Floor Schofield Bldg.

THE HYDRAULIC
PRESS BRICK CO.,
9th Floor Schofield Bldg.

THE QUEISSER-BLISS
COMPANY,
12th Floor Schofield Bldg.

THE CLEVELAND BUILDERS'
SUPPLY CO.,
9th Floor Hippodrome Bldg.

R. L. BECK,
231 The Arcade.

Mr. Homebuilder;

70,000 people in Evansville will be compelled to form their opinion of your taste and judgment by the exterior appearance of your new home.

While perhaps not more than a few hundred will ever have an opportunity to see your rug-covered floors and draperies, your furniture and electric light fixtures, thousands will pass your home every day who have an eye for the beautiful, the artistic, the substantial.

BRICK is the material that succeeds, as no other can, in adapting itself to the wants of the man with good taste and a moderate income. In the house built on a proper plan, it suggests all the qualities that should be associated with the word **HOME** — permanency, hospitality, warmth, comfort, beauty.

Therefore, when you build, **USE BRICK.**

Standard Brick Mfg. Co.

Uptown Office 328 Sycamore
EVANSVILLE, IND

THE GINGER LINE

Is the name by which our products are known, because our factory is at Ginger, Tex., where the ONLY deposit of DEEP-MINED FIRE CLAY in the entire Southwest is found. The character of this very rare clay has made the GINGER reputation.

THE TERM

GINGER BRICK

Does not refer to any certain shade—it covers a Full Line of the highest grade Face Brick that can be made, including Brown, Gray and Buff Mottled, Gray, Tan, Russet, Gunmetal, Buff, etc. We furnish a shade of GINGER BRICK to please every taste and suit every requirement.

MR. OWNER—LET US POINT OUT THE IMPORTANCE TO YOU OF SPECIFYING SOME SHADE OF GENUINE GINGER BRICK

Our Display Rooms contain more than 100 shades and characters of Face Brick, laid up in large panels. Call or write for samples, quotations and other information.

Fraser-Myers Brick Company

Sole Manufacturers GINGER BRICK.

Office and Display Rooms, 715-716-717 Wilson Building, Dallas, Texas

CLAY PRODUCTS HOUSE GREATEST ZOO

Chicago's New Animal Palace, Costing $160,000, is Marvel of Completeness, Utility and Architectural Beauty, and Marks Evolution

By WALTER E. ROYSE

The world's greatest Zoo—Lincoln Park, Chicago, naturally should have the world's greatest animal palace and the world's greatest animal palace should naturally be made of the world's greatest building material—clay products, and it is. This article tells all about it.

A NEW animal palace—the finest in the world, and absolutely fire-proof, built entirely of clay products, is being rushed to completion in the heart of Zooland, Lincoln Park, Chicago.

Modern, sanitary, odorless, the $160,000 structure is to replace an antiquated building, made also of brick, that for more than 25 years has housed the largest collection of highly-prized wild animals in the United States.

Brick, of which many kinds are used, became the accepted material even before tentative plans for the pretentious home of the Chicago park's animal kingdom were drawn. Reasons without number for the choice of brick over lumber, stone, cement or other material "just as good" were supplied.

At a time when the Lincoln Park Commissioners at regular meetings began to officially consider plans for the proposed mammoth animal house, Cy De Vry, head of the Lincoln Park Zoo, and a recognized authority on the care and training of wild animals, was named to superintend the construction of the building, which was to embrace features never before adopted in the construction of a home for wild animals and to be the most costly building of its kind in the world.

Material became the first basic point in construction to be settled by the park commission. Its importance apparently was fully appreciated. Some argued the adoption of brick; other members urged stone or cement; more than one proposed lumber, and various reasons in support of each favored material were advanced.

"Everything considered," someone began, "what material in your opinion, Mr. De Vry, should we use in building the new animal house?"

"Brick," the head of the Zoo answered, simply.

The commission patiently heard Mr. De Vry's arguments. The point was again discussed by the commissioners and the adoption of brick as the material followed.

How De Vry Argued for Brick.

Pointed arguments in support of the proposal to adopt brick and the rejection of other kinds of material were summed up as follows:

Brick best houses humans; why, therefore, should it not best house animals?

Brick outlasts every other material. (Surely we must build a building that will last the greatest number of years since we are to expend such a large sum —$160,000.)

Brick is fireproof. (Imagine the animal house on fire; and think of the consequences.)

Brick costs but little more than other materials and is far more economical in the end.

Brick does not require painting.

Brick does not depreciate in value as other building materials do.

Brick saves repair expenses.

Brick is cooler in summer and warmer in winter.

Brick best fits into sanitation plans—into the general scheme to make this the best, the finest, the most modern animal house in the world.

Succeeding months have seen such a building as was described rise on the site of the sea lion pool in the center of the Lincoln Park Zoo. Thousands of daily visitors—men, women and children—already have placed their stamp of approval on the new home for "Mr. De Vry's pets," as they style the animals at the Zoo.

These armies of home owners and future home builders have learned a lesson. It might be termed "The Many Uses of Brick," as brick in many forms is shown.

Not only is the big building itself built of brick, but the same material has been used in a score or more of ways, new to the layman. Artists in the ranks of the brickmasons at work on the large building have worked out the figures of four lions, in brick and mortar, just above the entrance at either end of the building. The "King of the Forest," in each instance, appears ready to attack an enemy.

Use $20,000 Worth of Enameled Brick.

Enamel brick to the total cost of $20,000 have been used in the building, chiefly in the thirteen steel cages at one side of the building. The moss green enamel brick furnished a pretty background to the outside cages where the lions will be housed in the summer months.

In another month the animal palace will be finished and ready for occupancy. Mr. De Vry predicts that his "pets" will approve of their new home.

"Mr. Lion and Mrs. Lion will roar their approval of the new home. Mr. Tiger will do the same—only he will not roar—and the other 'pets' I know so well surely will find a way to show their appreciation," remarked the head of the Zoo.

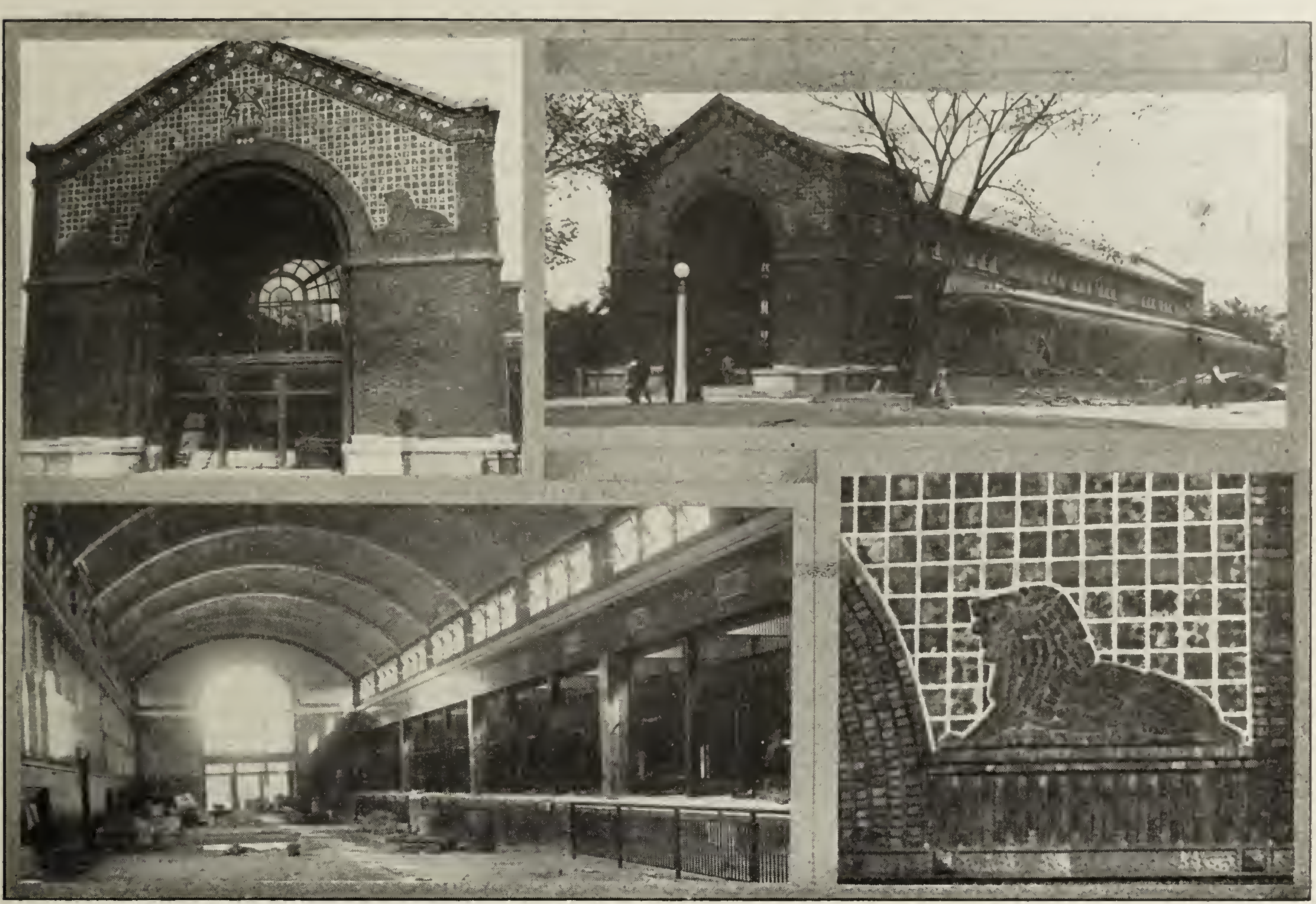
The famous animal trainer then plunged into a recital of the story of the new brick animal house—the story he tells a hundred times each day. He pointed out with enthusiasm the striking and strictly new and up-to-date features of what he seemed pleased to call "the most modern and costly animal house ever built."

De Vry Oversees Construction.

Appointed to superintend the construction of the big animal home, Mr. De Vry devoted much of his time to the work, not overlooking a single feature outlined in his arguments to the commission and subsequently included in the plans.

The laying of sloping or "theatre" floors in the building was one of the innovations that was carried out under the personal supervision of the head of the Zoo.

"These floors will prove a big success," commented Mr. De Vry. "In the old building the floors were the



Above Are Shown Several Views of the Magnificent New Animal Palace, Lincoln Park, Chicago. The First Picture Shows the Splendidly Executed Front Wall. At the right, the Out-door Cages May Be Seen. Below, at the Left, an Idea of the Interior of the Building May Be Gained. Many Beautiful Varieties of Clay Products are Displayed in the Walls and Floor. At the Right, Is a Closer View of the Detail Over the Doorway.

same as those used in ordinary buildings. Visitors frequently complained of this. Under the new arrangement visitors can see over each others heads."

Fourteen big steel cages in all were built out from the walls outside of the building. Here the animals will be housed in the summer months.

Description of the Material Used.

The building is 226 feet long and 70 feet wide, outside dimensions. Burned clay products figure throughout the entire building. Steel is used for structural work, it being covered with a perforated screen and this by fireproofing made by the National Fire Proofing Co.

The facing of the walls six feet up from the bottom is of salt glazed vitrified brick furnished by the Thomas Moulding Co., of Chicago. The remainder is faced with a rough texture brick furnished by the same concern.

All the window casings and cornices are of architectural terra cotta, made by the Northwestern Terra Cotta Co., of Chicago, which blends with the dark brown brick of the walls.

The foyer of the building is faced with salt glazed vitrified brick for about four feet and from there up with a light cream colored enameled brick supplied by the Hydraulic Press Brick Co., of Chicago. The walls of the steel cages are faced with a dark green enameled brick furnished by the same concern. The change from the cream color to the green is made because of the yellowish tint of the animals that will be housed in the cages.

There are fourteen cages on the outside of the building which are connected directly with the inside cages by steel trap doors which lower into the basement out of the way. These outside cages also are faced with green enameled brick which by the way, cost $85 a thousand—about the most expensive brick that is made.

The inside ceiling is faced with white tile made by R. Guastavino & Co., of New York and Boston. The roof is of clay book tile, made by the Ludowici Celadon Co. The floors are of mosaic tile, made by the American Encaustic Tile Co. The only wood in the building is found in the floors of the cages.

Under all the cages are pits or tunnels which carry the plumbing. Steam heat is used throughout the building.

Large terra cotta flower urns are to be placed in front of each end of the building.

The ventilation is by washed air taken in by fans.

A monkey house, also of clay products, soon will be built and the old animal house will be used as a home for reptiles.

Rajah, a ferocious tiger, and Caesar, a big African lion, are among the new purchases that will soon arrive and be placed in the new brick animal house. Other animals recently bought include two spotted hyenas, two black leopards and a pair of "clouded" leopards.

The decrease in the output of common brick may be partly accounted for by the increased use of hollow block or tile for the construction of large buildings and even of dwellings. This form of construction offers many advantages, among which are economy in construction, the ease and rapidity with which the material can be put in the wall, and its non-conductivity.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. OCTOBER 15, 1912 No. 8

ABOUT SALESMANSHIP

MAKING brick and **SELLING** them are two different things. Almost **ANY** clay product manufacturer **KNOWS HOW** to select the clay, excavate it, temper it and make it into brick. He **HAS LEARNED HOW** to **DO THESE THINGS** after many years of experimenting, testing and trying.

But when it comes to taking the product of his kiln and **PLACING** it **ON** the market or **IN** a building or **IN** a street or **WHEREVER** his product is **INTENDED** to go, he is **ALL AT SEA.**

Selling, nowadays, like manufacturing, is a **SCIENCE.** A **GOOD** salesman is not developed in a day any more than is a **GOOD** brickmaker. He must study his wares, he must know his customers, he must understand his market.

Most clay product manufacturers **IMAGINE** they can **SELL** as well as **MAKE** their **PRODUCT. ONCE IN A WHILE** this self-confidence is justified. More often it is **MISPLACED.** But, while clayworkers, who are also salesmen, are rare it is an ideal combination wherever the two are found together.

Usually the **SUCCESSFUL** clay product plant is conducted by a man or set of men who are, above all, salesmen. They understand the science of selling and **HIRE** the brickmaker who understands the science of brickmaking.

And nine times out of ten, the clay product plant that fails has as its head a man that is a **GOOD BRICKMAKER** but a **POOR SALESMAN.**

The **AVERAGE BRICKMAKER,** however, **CAN** make a salesman out of himself if he **APPLIES** himself. He has the advantage over the man that doesn't know anything about his product but who is a good salesman. The good salesman must learn something about clay products before he can sell them, no matter how bright a fellow he may be. The brickmaker **ALREADY KNOWS THAT** much.

The problem, then, for the clay productman—the fellow that knows **HOW** to **MAKE** Clay Products—is to learn **HOW** to **SELL.** The fact that he **HAS** learned the difficult science and art of manufacturing durable, fire-resisting, time-defying material from clay, **SHOWS** that he **HAS THE METTLE TO LEARN ALMOST ANYTHING.**

Some manufacturers **BELIEVE** they are learning how to sell now, and they **ARE,** but they are doing it the **SAME** way they learned how to make clay products—by **FLOUNDERING AROUND** in a **HAPHAZARD** fashion, **TRUSTING** to **LUCK** one day and common sense the next.

The clay product man **SPENT MANY YEARS OF DRUDGERY** in the school of experience before he learned it was a **SHORTER** route to use science than to trust to luck.

The same is true of him today. He is making the **IDENTICAL** mistake of **TRUSTING TO LUCK** in selling his products, **FORGETTING** that scientific methods might be employed that would save him years of toil and many a dollar.

''Brick and Clay Record'' proposes to give the clay product man the opportunity to take the **SHORT** cut in learning how to sell his product.

It has, in course of preparation, a series of practical articles on salesmanship as applied to the clay product plant.

These articles will be prepared by one of the most successful sales campaign planners in the United States—a concern that has gone into the factory and office of some of the largest corporations in the land and reorganized their entire selling force.

This concern has begun with the manufactured product and followed its course until it reached the consumer's hand. Not only was a marketing plan and a publicity plan suggested but a school of instruction was maintained for salesmen, to teach them how to sell.

The same course is to be followed by ''Brick and Clay Record.'' The experts, who are to prepare this series of articles, accompanied by a member of the editorial staff of this journal, will first visit a number of representative clay product plants of

GO AFTER HIM—THAT'S WHAT HE NEEDS

the United States. Both the progressive and the unprogressive plants will be studied.

These experts will dig down to the **BOTTOM** of clay product salesmanship as it is conducted **TO-DAY.** The subject will be analyzed thoroughly and when the data is gathered the series of articles, covering a period of one year will be printed. One article will appear in each issue and it is intended that the first one will appear in an early number of the magazine.

FIRST BEGIN AT HOME

A great many clay product men seem to think that organization—nation-wide organization, is going to be a most difficult task, judging from the tone of some of the letters received in this office the last few days.

One writer even declares it to be **HIS** opinion that nation-wide organization, such as has been advocated and urged in these columns, is **IMPOSSIBLE.**

We agree with him that it **WILL** be, if the **MAJORITY** of the clay product manufacturers **FEEL THE SAME WAY HE DOES.**

Success in **ANY** movement depends entirely on the **SPIRIT** employed in the work to be done. If three-fourths of the claymen of the nation **WANT** to organize into one great fighting body they **WILL** organize. If they do **NOT** want to organize, **ALL** the **LABOR** and **ALL** the **ENERGY** of ten thousand exhorters **CANNOT INDUCE** them to.

But, thank goodness, the majority appears to be with the progressive element. Where there has been **ONE** writer who looks on the matter with a pessimistic squint there have been **SCORES** that write **OPTIMISTICALLY** and who are rolling up their sleeves, figuratively speaking, and plunging into the work they see ahead.

The way to organize—the way to join your forces with the forces of your neighbor—is to **DO** it.

If you live in a community where there are several representative clay product men get in **TOUCH** with them, **FIRST.** Get **THEIR** idea of association work. Ascertain if **THEY** are in sympathy with the spirit of organization.

If they **ARE,** then **YOUR** work is simplified. If they are **NOT,** you have some missionary labors to perform. It will be up to you, Mr. Clay Product Man, to point out the advantages of co-operation.

In other words co-operation must **BEGIN AT HOME.** Before the clay product manufacturer can hope to do much good as a member of any association, he must first see that he and his **IMMEDIATE** neighbors are a **UNIT.** He must see that there is a perfect bond existing between him and the others.

With community interests thoroughly formed—with the Spirit of organization absolutely established your **NEXT** step should be to join the state or national organization that represents your particular branch of the great clay industry.

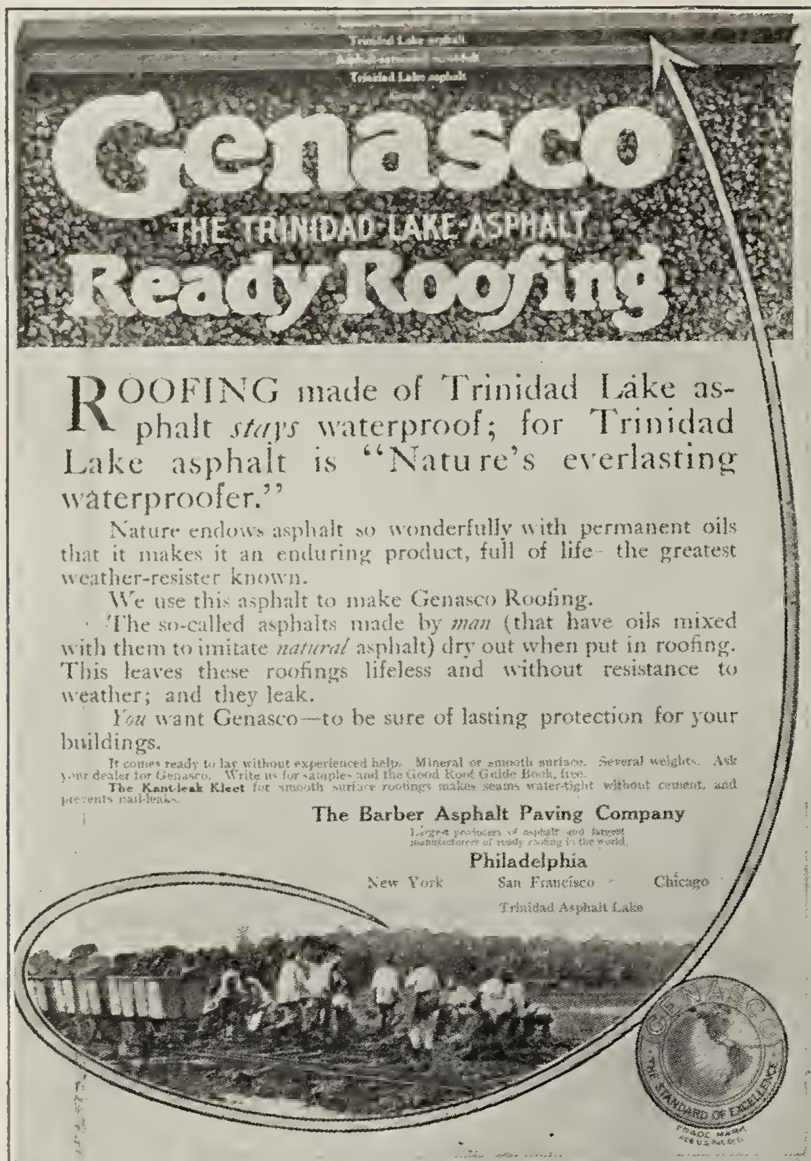
And you **MUSTN'T STOP** there. As a progressive clay product manufacturer, who has the interest of the industry you represent at heart, you should see that your fellow townsmen **DO AS YOU HAVE DONE**—join the greater organizations of your state or of the nation.

Have you stopped to think **WHAT COMMUNITY ORGANIZATION MEANS?** Do you **REALIZE** the **BENEFIT TO BE GAINED** from it—the prosperity it insures to you, locally?

Take, for instance a small city, not many miles from Chicago. There are no less than half a dozen clay product manufacturers there. Among the number there are not more than two that speak to each other, least of all that **WORK IN HARMONY.**

What is the result? Here it is: When a building job is to be let they begin to fight for it. Prices

THIS IS THE WAY YOUR FOES SEEK BUSINESS


Trinidad Lake asphalt
Asphalt-saturated wool felt
Trinidad Lake asphalt
GENASCO
THE STANDARD OF EXCELLENCE
TRADE MARK REG. U.S. PAT. OFF.

Genasco
THE TRINIDAD-LAKE-ASPHALT
Ready Roofing

ROOFING made of Trinidad Lake asphalt *stays* waterproof; for Trinidad Lake asphalt is "Nature's everlasting waterproofer."

Nature endows asphalt so wonderfully with permanent oils that it makes it an enduring product, full of life—the greatest weather-resister known.

We use this asphalt to make Genasco Roofing.

The so-called asphalts made by *man* (that have oils mixed with them to imitate *natural* asphalt) dry out when put in roofing. This leaves these roofings lifeless and without resistance to weather; and they leak.

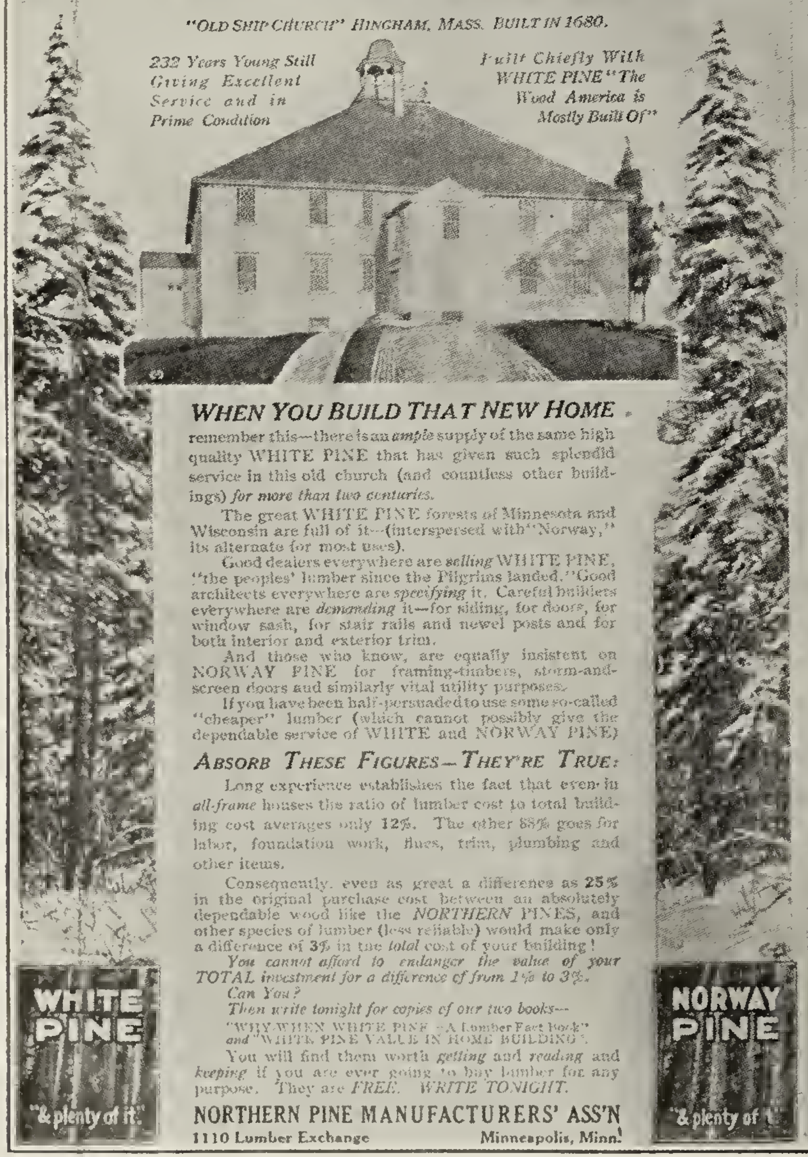
You want Genasco—to be sure of lasting protection for your buildings.

It comes ready to lay without experienced help. Mineral or smooth surface. Several weights. Ask your dealer for Genasco. Write us for samples and the Good Roof Guide Book, free.

The Kant-leak Kleet for smooth surface roofings makes seams water-tight without cement, and prevents nail-leaks.

The Barber Asphalt Paving Company
Largest producers of asphalt and largest manufacturers of ready roofing in the world.
Philadelphia
New York San Francisco Chicago

Trinidad Asphalt Lake


WHITE PINE
"& plenty of it."
NORWAY PINE
"& plenty of it."

"OLD SHIP CHURCH" HINGHAM, MASS. BUILT IN 1680.

232 Years Young Still Giving Excellent Service and in Prime Condition

Built Chiefly With WHITE PINE "The Wood America is Mostly Built Of"

WHEN YOU BUILD THAT NEW HOME

remember this—there is an *ample* supply of the same high quality WHITE PINE that has given such splendid service in this old church (and countless other buildings) *for more than two centuries.*

The great WHITE PINE forests of Minnesota and Wisconsin are full of it—(interspersed with "Norway," its alternate for most uses).

Good dealers everywhere are *selling* WHITE PINE, "the peoples' lumber since the Pilgrims landed." Good architects everywhere are *specifying* it. Careful builders everywhere are *demanding* it—for siding, for doors, for window sash, for stair rails and newel posts and for both interior and exterior trim.

And those who know, are equally insistent on NORWAY PINE for framing-timbers, storm-and-screen doors and similarly vital utility purposes.

If you have been half-persuaded to use some so-called "cheaper" lumber (which cannot possibly give the dependable service of WHITE and NORWAY PINE)

ABSORB THESE FIGURES—THEY'RE TRUE:

Long experience establishes the fact that even in *all-frame* houses the ratio of lumber cost to total building cost averages only **12%**. The other 88% goes for labor, foundation work, flues, trim, plumbing and other items.

Consequently, even as great a difference as **25%** in the original purchase cost between an absolutely dependable wood like the *NORTHERN* PINES, and other species of lumber (less reliable) would make only a difference of **3%** in the *total* cost of your building!

You cannot afford to endanger the value of your TOTAL investment for a difference of from 1% to 3%.

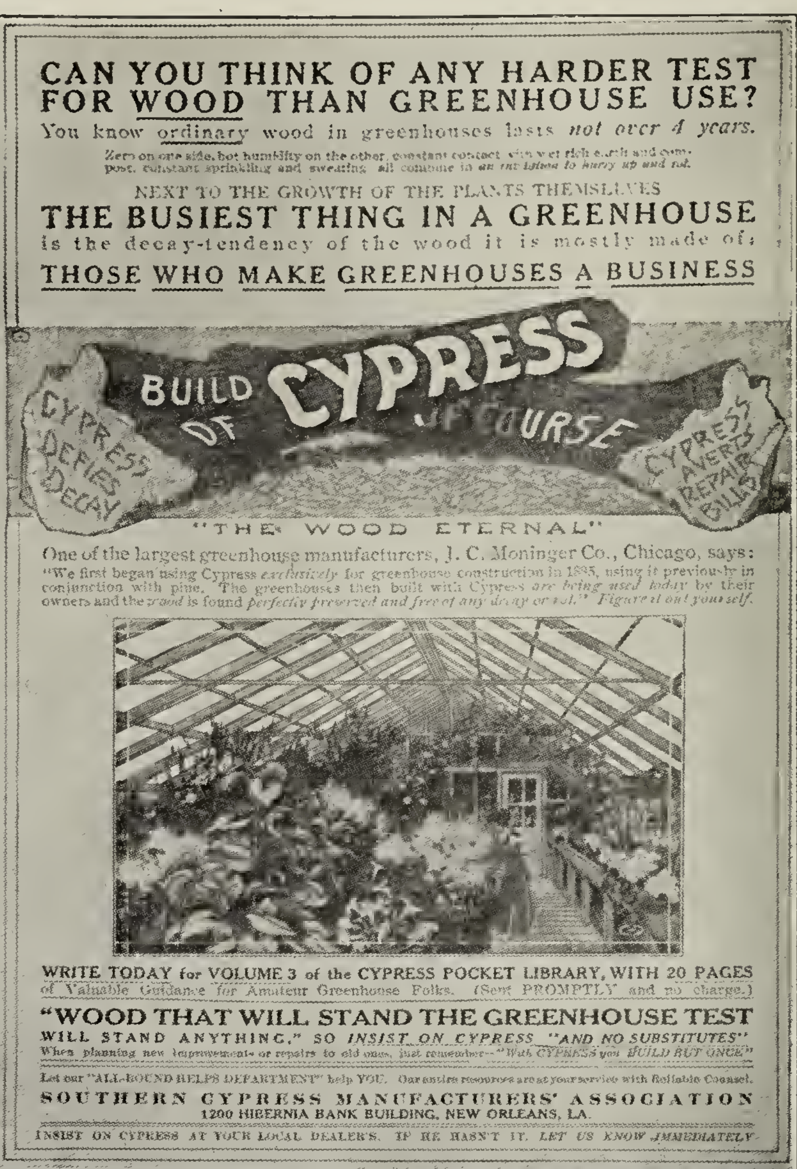
Can You?

Then write tonight for copies of our two books—

"WHY-WHEN WHITE PINE—A Lumber Fact Book" *and* "WHITE PINE VALUE IN HOME BUILDING".

You will find them worth *getting* and *reading* and *keeping* if you are ever going to buy lumber for any purpose. They are *FREE. WRITE TONIGHT.*

NORTHERN PINE MANUFACTURERS' ASS'N
1110 Lumber Exchange Minneapolis, Minn.


BUILD OF CYPRESS OF COURSE
CYPRESS DEFIES DECAY
CYPRESS AVERTS REPAIR BILLS

CAN YOU THINK OF ANY HARDER TEST FOR WOOD THAN GREENHOUSE USE?

You know ordinary wood in greenhouses lasts *not over 4 years.*

Zero on one side, hot humidity on the other, constant contact with wet rich earth and compost, constant sprinkling and sweating, all combine in an *invitation to hurry up and rot.*

NEXT TO THE GROWTH OF THE PLANTS THEMSELVES
THE BUSIEST THING IN A GREENHOUSE
is the decay-tendency of the wood it is mostly made of;
THOSE WHO MAKE GREENHOUSES A BUSINESS

"THE WOOD ETERNAL"

One of the largest greenhouse manufacturers, J. C. Moninger Co., Chicago, says: "We first began using Cypress *exclusively* for greenhouse construction in 1895, using it previously in conjunction with pine. The greenhouses then built with Cypress *are being used today* by their owners and the *wood* is found *perfectly preserved and free of any decay or rot.*" *Figure it out yourself.*

WRITE TODAY for VOLUME 3 of the CYPRESS POCKET LIBRARY, WITH 20 PAGES of Valuable Guidance for Amateur Greenhouse Folks. (Sent PROMPTLY and no charge.)

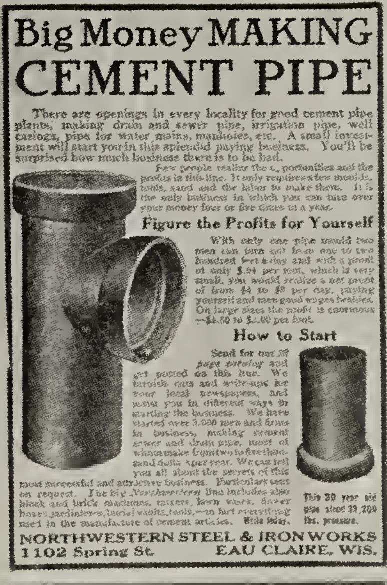
"WOOD THAT WILL STAND THE GREENHOUSE TEST WILL STAND ANYTHING." SO *INSIST ON CYPRESS "AND NO SUBSTITUTES"*

When planning new improvements or repairs to old ones, just remember—"*With CYPRESS you BUILD BUT ONCE.*"

Let our "ALL-ROUND HELPS DEPARTMENT" help YOU. Our entire resources are at your service with Reliable Counsel.

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION
1200 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.

INSIST ON CYPRESS AT YOUR LOCAL DEALER'S. IF HE HASN'T IT, *LET US KNOW IMMEDIATELY.*



Big Money MAKING CEMENT PIPE

There are openings in every locality for good cement pipe plants, making drain and sewer pipe, irrigation pipe, well casings, pipe for water mains, manholes, etc. A small investment will start you in this splendid paying business. You'll be surprised how much business there is to be had.

Few people realize the opportunities and the profits in this line. It only requires a few moulds, tools, sand and the labor to make them. It is the only business in which you can turn over your money four or five times in a year.

Figure the Profits for Yourself

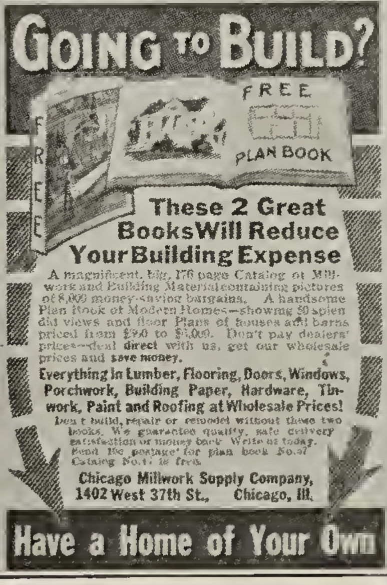
With only one pipe mould two men can turn out from one to two hundred feet a day and with a profit of only $.04 per foot, which is very small, you would realize a net profit of from $4 to $8 per day, paying yourself and men good wages besides. On large sizes the profit is enormous—$1.50 to $2.00 per foot.

How to Start

Send for our 32 page catalog and get posted on this line. We furnish cuts and write-ups for your local newspapers, and assist you in different ways in starting the business. We have started over 3,000 men and firms in business, making cement sewer and drain pipe, most of whom make from two to five thousand dollars per year. We can tell you all about the secrets of this most successful and attractive business. Particulars sent on request. The big Northwestern line includes also block and brick machines, mixers, lawn vases, flower boxes, jardinieres, burial vaults, tanks,—in fact everything used in the manufacture of cement articles. Write today.

This 30 year old pipe stood 33,200 lbs. pressure.

NORTHWESTERN STEEL & IRON WORKS
1102 Spring St. EAU CLAIRE, WIS.


FREE
FREE
PLAN BOOK

GOING TO BUILD?

These 2 Great Books Will Reduce Your Building Expense

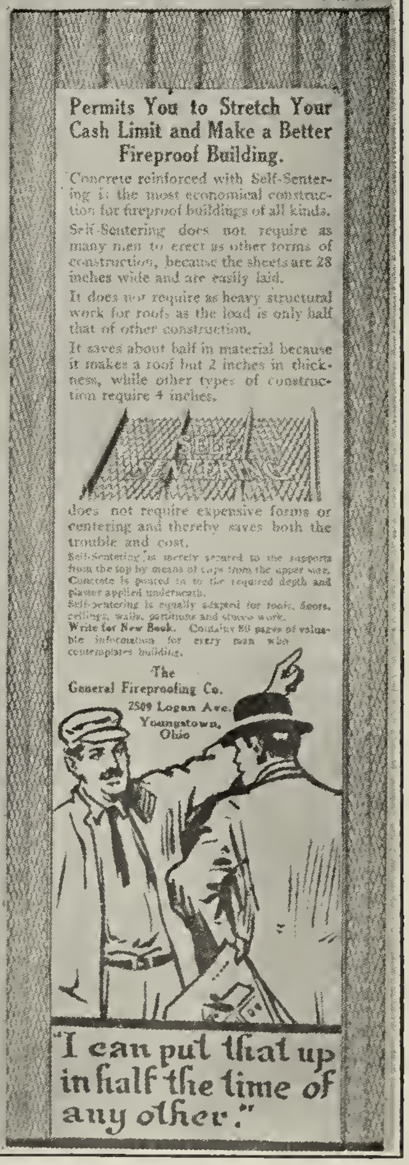
A magnificent, big, 176 page Catalog of Millwork and Building Material containing pictures of 8,000 money-saving bargains. A handsome Plan Book of Modern Homes—showing 50 splendid views and floor Plans of houses and barns priced from $900 to $5,000. Don't pay dealers' prices—deal **direct** with us, get our wholesale prices and **save money.**

Everything in Lumber, Flooring, Doors, Windows, Porchwork, Building Paper, Hardware, Tinwork, Paint and Roofing at Wholesale Prices!

Don't build, repair or remodel without these two books. We guarantee quality, safe delivery satisfaction or money back. Write us today. Send 10c postage for plan book No. 57 Catalog No. 61 is free.

Chicago Millwork Supply Company,
1402 West 37th St., Chicago, Ill.

Have a Home of Your Own



Permits You to Stretch Your Cash Limit and Make a Better Fireproof Building.

Concrete reinforced with Self-Sentering is the most economical construction for fireproof buildings of all kinds.

Self-Sentering does not require as many men to erect as other forms of construction, because the sheets are 28 inches wide and are easily laid.

It does not require as heavy structural work for roofs as the load is only half that of other construction.

It saves about half in material because it makes a roof but 2 inches in thickness, while other types of construction require 4 inches.

does not require expensive forms or centering and thereby saves both the trouble and cost.

Self-Sentering is merely secured to the supports from the top by means of clips from the upper side. Concrete is poured in to the required depth and plaster applied underneath.

Self-Sentering is equally adapted for roofs, floors, ceilings, walls, partitions and stucco work.

Write for New Book. Contains 80 pages of valuable information for every man who contemplates building.

The
General Fireproofing Co.
2509 Logan Ave.
Youngstown,
Ohio

"I can put that up in half the time of any other."

are slashed. The other fellow's product is abused. If they succeed in getting the contractor or the builder to overlook **THEIR PERSONAL SQUABBLE** long enough to **TALK BUSINESS** they may sell him, but **HOW**? Well, **NOT AT A PROFIT**—that is certain.

And, in the meantime, what is happening? Why, the concrete men and the cypress lumber men are chuckling up their sleeves. Why? Because they know the **QUICKEST** and the **CHEAPEST** way to **KILL OFF DANGEROUS COMPETITION** is to get the members of that competition to **FIGHTING AMONG** themselves and to **SLASHING** the **PRICES** of **THEIR** own product. They know that a competitor who sells **BELOW** the **COST** of manufacturing is **CUTTING** his own throat and that soon he will **CEASE TO BE A COMPETITOR** of **ANYONE**.

Suppose, in that particular city, these half dozen clay product men **WERE ORGANIZED** into a local association, don't you believe their business conditions would be improved?

First of all, this local Association would create a demand for their product by proper publicity work. They would form a pool just as the building brick men in Cleveland, Chicago and elsewhere have done and would hire a competent man to take charge of this publicity work, or accept the usual offer of the local newspaper man to do it free. Then they would begin to hammer away at the buying and the building public until no one would think of building the simplest working man's cottage with anything except brick or some other form of burned clay products.

Second, a working agreement would be determined upon. Prices would be regulated, and the cut-throat methods stopped.

Will They Do It?

The following statement is a copy of the one required by the Government for all publications to make under the recent enactment of Congress. The law further requires that the statement shall be printed in the newspaper, magazine or other periodical making the same. In addition to this, the Government requires every daily newspaper to make public its actual paid circulation, but exempts all other publications from complying with this if they do not feel disposed to do so.

It will be seen, then, that "Brick and Clay Record" is not required to give its circulation but as its publishers have no reason to be ashamed of it, they accepted the opportunity offered by the United States Government.

All journals devoted to the clay product interests will, under the law, be required to print a statement similar to the one below with the exception of announcing their circulation. It will be interesting, however, to advertisers to know whether these publishers will also show the same fearlessness as "Brick and Clay Record" and print the circulation figures despite the fact they are not compelled to do so.

COPY.

Statement of the Ownership, Management, Circulation, etc., of **"Brick and Clay Record,"** published **semi-monthly** at **Chicago, Ill.,** required by the Act of August 24, 1912.

Managing Editor, **Iverson C. Wells,** 4435 Clifton Ave., Chicago, Ill.

Manager, **C. L. Rorick,** 1015 Winona St., Chicago, Ill.

Publishers, **Kenfield-Leach Co.,** Chicago, Ill.

Stockholders holding 1 per cent or more of total amount of stock:

F. S. Kenfield, 1623 E. 51st St., Chicago, Ill.

H. H. Rosenberg, 206 E. 44th St., Chicago, Ill.

Estate of A. T. Leach, Harris, Mo.

Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities:

None.

Average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to **PAID** subscribers during the six months preceding the date of this statement. (This information is required from daily newspapers only.) **6,395.**

(Signed) **IVERSON C. WELLS,**
Managing Editor.

Sworn to and subscribed before me this **First** day of **October, 1912.**

F. J. SAUER,
Notary Public.

(SEAL) Commission expires Sept. 17, 1916.

Third, the bricklayer who now **HOLDS THE REINS** would be reckoned with. The man who **MAKES** the brick and the man who buys them would have **SOMETHING** to say about **HOW** and **WHERE** the material was to be laid.

But these are just a few of the possibilities of local association work. There are **MANY OTHER** problems that require solution in every community and which cannot be solved by individuals.

Working in harmony with a state or national body, the local fellows would be in a position to regulate freight rates, to adjust matters that concern interstate and state commerce, and bring about reforms and legislation that would be of benefit to them.

AN APPEAL

Organization is a **SIMPLE** matter if you **WANT** to organize. **LOCAL** organization or cooperation is the **FIRST** step to be taken. **TODAY IS A GOOD TIME TO BEGIN.**

One of the important branches of the clay product industry that was **NOT** represented last year at the Clay Show was the mantel, grate and tile interests. The brick manufacturer in his several divisions, the sewer pipe man, the drain tile maker, the terra cotta man and, in fact, practically every other interest had creditable displays. The encaustic tile man, however, was conspicious by his **ABSENCE**. He alone did not appear to realize the wonderful opportunity, which the Show offered to promote his interests, and took no active part in the first exposition.

When you take into consideration the great field this interest covers and the possibilities for increasing this field it seems the fancy tile man made a **SERIOUS** mistake and that he will make even a

GREATER MISTAKE THIS YEAR if he **INSISTS** on following this **SAME** course.

Think of the many uses ornamental tile has in the construction of the home and the commercial building, and what a creditable display could be made at the next National Clay Product Exposition.

This branch of the clay industry embraces not only the fancy and plain tiles for walls, ceilings and floors—a most profitable field in itself, but also the decorative tiles and the tiles from which the most beautiful effects are obtained in the construction of artistic mantels.

The encaustic tile interests not only should be represented at the next annual Clay Product Exposition from selfish motives but because they **OWE THAT MUCH** to the people who are **FIGHTING THEIR BATTLES** in the great campaign of publicity inaugurated by the Exposition Company.

The Clay Products Exposition was not instituted for the promotion of any **ONE** interest or for the purpose of **BRINGING PROFIT** to its sponsors. It has a **BROADER** and **MORE UNSELFISH** motive than that.

It is an exposition devoted to **EVERY BRANCH** of the clay industry. It seeks to advance the interests of clay products both in the arts and the crafts. It proposes to **CREATE A DEMAND** for these manufactured products among the people who **BUY** and **BUILD.**

Any branch of the clay industry that **WITHHOLDS ITS ACTIVE SUPPORT** shows inappreciation—ingratitude. By such an action it tells the rest of the world it is willing to "**SIT UNDER THE TREE AND WAIT FOR SOMEONE ELSE TO KNOCK DOWN THE PLUMS.**"

This is a **WRONG** spirit. It is an **UNFAIR** spirit The encaustic tile makers certainly do not want to be classified this way. The members of the industry are **LIVE** wires. They **KNOW THE VALUE** of this sort of publicity. They **KNOW THE PROFIT** that will be derived from a big exposition like the Clay Show.

The encaustic tile men should get their heads together and arrange for a display that will be a credit not only to themselves but to the clay industry as a whole. And no time should be lost in making a beginning.

WHAT YOUR FOE IS DOING

Mr. Clay Manufacturer, we ask you to buy a copy of the current issues of any one of the big monthly fiction magazines and turn to the advertising section. You will see something there that should interest you very deeply.

Take for instance that full page advertisement of the Northern Pine Association. Notice how this competitor of yours **IS GOING AFTER BUSINESS?** The **LUMBER MAN** evidently believes in association work and in creating a demand by generous publicity, doesn't he?

After you have absorbed all the information the pine fellow has placed before you and before the thousands and thousands of **OTHER** readers turn to that full page spread of the Southern Cypress Association. Observe how he is working along the same lines as his northern brother is doing.

Then turn over the pages and rest your eye on the advertisements of some more of your hustling competitors. Notice how each and everyone of them are pounding away at the home builder and the other buyers of products that clay should replace?

WHAT LESSON do **YOU GET** from these advertisements? What **IMPULSE** do you **FEEL** when you read them over? We would like very much to have an answer from every one of our readers to these two questions and we ask you to sit down **NOW** and write us just what you think about them.

(To those who have neither the inclination nor time to hunt through the magazines for the advertisements mentioned in this editorial we have reproduced them in this issue. They all appeared in the September issue of Everybody's.)

COMMENT FROM READERS

These Letters Were Inspired by the Editorials on Association Work Published in "Brick and Clay Record" Recently.

The crowded condition of our columns this issue prevents the publication of many of the letters received on association work since the Oct. 1 "Brick and Clay Record."

We must again call attention to the fact that the very fellow we WANT to hear from—the clayworker who heretofore has not shown much interest in general organization work, is doing very little of the writing.

"Brick and Clay Record" is anxious to hear from the "sleeping" manufacturer—the fellow who does not believe his interests are with the industry as a whole. We want to know what he thinks about the matter. There are always two sides to every question and the other side would be particularly interesting just now.

The following letter is from J. Parker B. Fiske, secretary of the Building Brick Association, Flatiron Building, New York:

> We commend the efforts that you are making in your editorial columns most highly. You are certainly showing the brickmaker his duty to himself and his craft in such language that he cannot fail to understand it. If this does not result in some live action on his part, then we certainly will have to conclude that the brickmaker is absolutely dead.

Mr. Fiske is, as all progressive clay manufacturers know, one of the "live wires" in the industry and his association and is doing a great work. It is to be regretted that his work is hampered by a lack of support. Every building brick manufacturer in the country should be affiliated with the work he is doing.

Two letters from bricklayers prove interesting reading in view of the fight that is being waged against the concrete and lumber men. This letter from Wm. S. Dagnells, secretary of the Bricklayers' and Masons' International Union No. 1 at Vancouver, B. C., offers some excellent food for thought:

> The members of our union appreciate the fight you are putting up in "Brick versus Concrete." I may say that in the sewer work in this city concrete is gradually supplanting brickwork. But I blame it mostly to the high price of brick—common from $12 to $17, press $45. It seems singular that with such prices prevailing there would not be more brick manufactured around this city.

Samuel J. Chambers, 887 Perkiomen St., Philadelphia, Pa., is another bricklayer who commends this journal in its fight against concrete.

If all the bricklayers would manifest the same spirit towards the brickmaker it would not take long to bring about equable working conditions which would benefit not only the bricklayer but the manufacturer.

OLD OHIO ASSOCIATION TO BE REVIVED.

State Clayworkers Seek to Reorganize Body Which Was Absorbed by the National Organization.

The old Ohio Brick & Tile Association, which was absorbed by the national association, is to be revived and brought again to full life and vigor.

After the death of the old association, a few of the drain tile makers of Northwestern Ohio organized a little association known as the Northwestern Ohio Drain Tile Association and held four meetings a year in Toledo, Ohio. This association was fairly successful and at the January meeting it was decided to enlarge the scope of the association and make it state wide and invite all of the Ohio clayworkers to join with it and revive the old Ohio association.

An executive committee and officers were selected who have arranged for a clayworkers' meeting to be held in Columbus, Ohio, on Dec. 10 and 11. The meeting will be held at the School of Mines Building of the Ohio State University where rooms amply large will be available, provided with blackboards on which the various papers to be read can be illustrated. The apparatus of the Ceramic Department at this building also can be used to demonstrate any point. A programme covering eight subjects has been arranged and papers will be prepared and read by men, well known in the clayworking field. This programme is to be announced in full at a later date and should attract and induce every clayworker in Ohio as well as many from the border states to attend this meeting.

The holding of the meeting at the State University is appropriate as the Ceramic Department of the University is interested and will lend its aid to make it a success. It is hoped that all of Ohio's clayworkers will attend and take their wives who could thus have an opportunity to do their Christmas shopping.

DO YOU KNOW OF ANY?

Party Searching Vainly for Concrete Building, Free From Cracks and Checks.

We are curious to know how many replies will be received by the man who sent the following letter to a building material journal. Our prediction is that he will be an octogenarian before his quest is ended.

To the Editor: Paul Smiths, N. Y.

I would like to ask if any one knows of concrete buildings of a large expanse of surface in roof or side walls, that show no cracks or hair lines that will later develop into checks, the said structure having been in use in the completed state for more than two years. I have worked on some that were considered the best, but unfortunately for me I have not been able to keep tab on this point of interest except where there were such faults in evidence. Bad news goes fastest and farthest. Is there good news of some faultless work in a concrete roof? Will you or some critical brother say if there is an example of a concrete building which has stood the test mentioned above for over two years without the appearance of these defects, and if so where it is and tell us what the plan of construction is?

EDWARDS APPOINTED COMMISSIONER.

To Represent Mantel, Tile and Grate Interests in Planning Clay Products Exposition.

Ward B. Edwards, of Utica, N. Y., who is editor of the only journal in the world, so far as known, devoted to the interests of the mantel, tile and grate industry, has again been honored by an appointment as one of the eastern commissioners of the Clay Products Exposition and the exposition management counts itself fortunate in being able to number him among the members of this commission. Mr. Edwards is bending every energy toward inducing the tile manufacturers of the United States to exhibit their products at Chicago and it will be no fault of his if they do not respond with some attractive displays. Mr. Edwards is a ready and forceful writer on all subjects which his publication represents and many of his articles have been reprinted by foreign publications. Mr. Edwards is also actively interested in politics, being one of the commissioners of election for Oneida County, N. Y.

W. B. Edwards, Eastern Com. of Clay Prod. Exp. Co.

Permanent Builders' Supply Exhibit.

Arrangements are now under way for the installation of an exhibit of building materials, to occupy the entire second floor of the new Karpen Building, at Michigan Ave. and Peck Court, Chicago. The exhibit, which will be known as the Chicago Builders' Material Permanent Exhibit, will be under the management of John W. Northrup. It will be complete in all details and will include a line of clay products.

RICHEST INDIAN—A BRICK MANUFACTURER

Brickmaking, One Branch of the Immense Business Interests of Lon C. Hill, Educated Redskin Who Helped to Civilize Lone Star State

One of the most complete of the smaller pressed brick plants in Texas is that of Lon C. Hill at Harlingen, Tex. Mr. Hill is one of the pioneer land developers of the lower Rio Grande section. When he went to Harlingen, ten years ago, the valley region was a mysterious and almost inpenetrable wilderness of chaparral. The nearest railroad outlet was 160 miles away. The towns of Harlingen and many other thriving communities that now have populations ranging from 2,000 to 4,000 of industrious and contented people, were not upon the map.

Largely through the personal efforts of Mr. Hill a railroad was built down into the valley from the North and a branch line constructed up the Rio Grande for fifty miles. Following the construction of this road a new era of development set in and many thousands of acres of wild lands have been reclaimed. It is estimated that more than $25,000,000 of capital have been invested in the territory within a radius of forty miles of Harlingen during the last six years. In the new towns as well as in the older town of Brownsville many substantial brick buildings have been erected.

Stacks of Mesquitte Wood Used for Burning Brick at the Lon C. Hill Pressed Brick Plant, Harlingen, Texas.

In establishing the brick plant there three years ago Mr. Hill had in view primarily the supplying of material for his own personal use in the erection of buildings in the new town of Harlingen. He has added to the plant from time to time until it is now equipped with first class machinery and is capable of turning out sufficient brick to meet all the demands of the home town and immediate section. Mr. Hill is just now burning 500,000 brick for use in the erection of a large sugar mill. He will later install a complete equipment for the manufacture of drainage tile.

World's Wealthiest Indian.

In connection with the above article, it will be interesting to note that Lon C. Hill, the owner of the plant, is said to be the richest Indian in the world and one of the largest land holders in Texas. Mr. Hill, during the past few months, has sold a portion of his land for $2,000,000, and still owns 90,000 acres in the Rio Grande Valley, with an estimated valuation of $4,000,000. It may appear a strange thing to say of an Indian, but it is nevertheless true that he blazed the trail for civilization and development through the Rio Grande Valley that was infested with cattle thieves, bandits and Mexican desperadoes. Mr. Hill, while he does not care to talk about those early days, is said, by his friends and admirers, to have performed deeds of valor that made for him a great reputation as a fighter and reformer, and owing to the fact of his having made war on and led posses against desperadoes and outlaws, there are some who still hold a grudge against him, and on this account he is never without two big six-shooters strapped to his belt. Mr. Hill's long black hair falls to his shoulders and his rugged features give him a picturesque appearance. While he is reticent concerning his early experiences and methods of money-making, he states that every time he moved into a different section of the country and bought land at $1 an acre, he later sold the land for $50 an acre. This interesting man is a graduate of the Texas University and after working up a law practice which netted him $30,000 a year, he left the city and went to the Rio Grande Valley for the purpose of ridding it of outlaws and establishing a fortune for himself. Seeing an opportunity to advance his own interests, as well as furnish brick for the growing demand, Mr. Hill established at Harlingen, twenty-five miles from Brownsville, the plant known as the Lon C. Hill plant, and success has attended the venture.

Brick Endureth Long.

The great things in life are products of slow growth. Mushrooms spring up in a night, an oak requires decades. Fads survive only for weeks, and philosophy for centuries. Brick's reputation as the most durable building material is the result of centuries of growth. Brick will endure, when other "just as good" materials are a thing of the past.

Brick sales thrive on publicity, persistency and the personal equation. Lack of any of these means slow or scanty growth.

COLORING OF GLAZED WARE.

Hawkeye Sewer Pipe Burner Opens Discussion as to Cause of Discolored Pipe.

Editor "Brick and Clay Record."—I have taken a great deal of interest in the articles, published in "Brick and Clay Record," in regard to salt glazing. It seems that nearly every phase of the subject has been touched upon except the matter of coloring. This, as is well known to all manufacturers of sewer pipe, is as important a part of the burning process as any other, for the trade demands, as a rule, a dark colored pipe with a bright, smooth glaze. I know of several plants where a good deal of trouble has been encountered in producing a dark color; the colors produced in their kilns being various shades of green.

One plant in particular, that I know of, used a black shale, high in carbon, filled with iron pyrite and also a fairly high content of lime. This clay, when finished under purely oxidizing conditions, produced a green pipe, perfectly smooth, with a good bright glaze. Under reducing conditions, the pipe, from 3 in. up to 12 in., would take a good color but the iron would come out in such quantities as to render the pipe practically useless on account of its roughness. The larger sizes from 12 in. up to 36 in. would take a much poorer glaze and the color was exceptionally bad. The pipe, from 15 in. to 24 in., would have a fairly good color on the inside, but very poor on the outside; the larger the pipe, the poorer color and glaze we would get. This, I think could be accounted for by the fact that the clay contained pyrite of iron and lime, which, during the salting, would probably form a lime iron silicate, causing a green color. This, in fact I felt sure, was the trouble but since then I have had experience with altogether different clays, which were entirely free from lime and containing far less pyrite of iron, and it might be well to add that in neither of these two instances was the clay weathered to any extent whatever.

In the plant, first mentioned, we took a 36 in. pipe and when it was perfectly dry on the floor, we sandpapered the spots, on the outside of the pipe, and when this pipe was drawn from the kiln, it showed a decided improvement in color where we had sandpapered it and the most logical deduction, from an experiment of this kind, would be that there was some substance in the clay that was more or less soluble in water. This substance, whatever it was, would come to the surface of the pipe in drying and leave its load of soluble matter deposited on the outside of the pipe. The reason the larger pipe would take a better color on the inside than on the outside, could be attributed to the fact that a pipe dries almost twice as fast on the outside as it does on the inside, thus causing twice the amount of soluble matter to be deposited.

The fact that the smaller pipe took a good color, both inside and outside, could be laid to the fact that the thinner shells on these pipes contained a much smaller amount of water than the thicker shells of the large pipe but in the case of the second plant, the discoloration seemed just as bad in the small pipe as in the large, although in the smaller pipe, the color on the inside seemed to be much better than on the outside.

The following is an analysis of the clay used in the second plant:

	Per Cent.		Per Cent.
Sulphur Trioxide	0.59	Iron Oxide	2.28
Moisture	0.84	Lime	0.65
Combined Water	6.92	Magnesia	0.39
Silica	62.75	Soda	1.49
Alumina	22.00		

Cause of Discoloration.

Unfortunately I have not an analysis of the clay used in the first plant, but I am sure that the lime content was much higher, because it was easily detected by the use of a drop or two of hydrochloric acid, while the clay, at the second plant, showed no reaction whatever when the acid was applied. Samples of the clay as analyzed above, were burned at different plants, and produced ware showing an excellent color and a clear, bright glaze. I have had considerable experience in burning and have in every case, except the two mentioned in this article, obtained ware of an excellent color. And the trial pieces, drawn from the kiln, immediately after salting, showed a good green color, but in these two instances, the ware in the kilns did not change color in the least and when burned was practically the same color as the trial pieces.

We use an excellent grade of Southern Indiana coal, which is very low in sulphur, and the samples referred to above were burned with the same coal but at a different plant.

I would like to hear from some of the sewer pipe burners, through "Brick and Clay Record," in regard to their experiences along this line and what they think is the cause of the discoloration, also what methods there are, within the range of sewer pipe burners, that can be used to remedy the same.

Hawkeye Burner.

DIPPING LIMEY BRICK.

Suggestion for Immersing Brick in Water—Loaded Wagon to be Drawn Through Tank.

Many methods of dealing with "limey brick" have been suggested, among them being the dipping of the brick in water. Hand-dipping being too expensive to consider, the following plan has been suggested by a writer in the British Clayworker, and while perhaps not practicable for the American manufacturers it may offer some suggestions of value.

"There is no simpler or better plan than to use a long shallow pond or tank about 25 to 30 yards in length, the central length of 10 yards being flat and the sides gently sloping from each end. The brick are loaded on to wagons in the kiln, and are drawn through the tank by means of a rope or chain haulage, in a manner similar to that used in some tunnel dryers. As one wagon enters the tank another is drawn out from the other end.

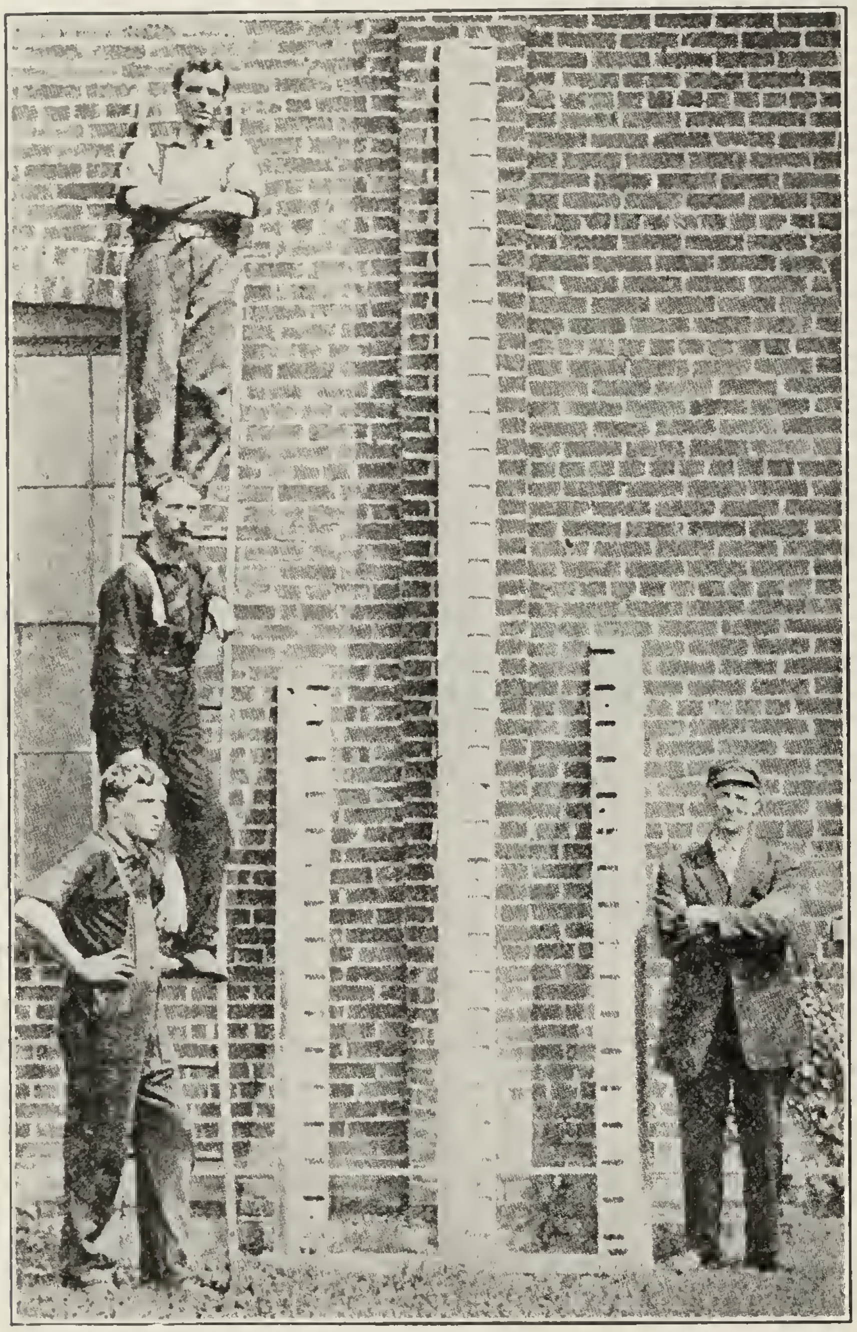
"When space cannot be so easily obtained as to make a tank of the shape described practicable, it may be necessary to use some simple form of lift by means of which the wagons can be lowered into a shallow well. For this purpose a double lift is to be preferred, as by putting a wagon on each side alternately, the only power required is that necessary to overcome the friction of the lift itself; the two wagons loaded with brick practically balancing each other. A simple winch will then enable the arrangement to be worked with comparative ease by one man. The water should be changed occasionally and should by preference be rain water."

MONSTER VENEER KNIFE.

Remarkable Knife Made to Fill a Special Order—Few Made in Such Sizes.

An unusually large veneer knife is shown herewith. We do not know the exact dimensions of the knife, but it can readily be seen that it is "some knife."

This was ordered for a special slicing machine. Great accuracy is required in order to grind these knives straight and true, to temper them properly and to finish them so as to give results.



A Record-Size Brick Veneer Knife.

Knives of this size are very rare, in fact it is said that only about twelve of them are ordered in the United States in any one year.

Keep Your Coal Covered.

In the summer time it does not matter so much where the coal is stored, but in the wet months of winter a serious loss in heating value very easily occurs. No clayworker willingly uses wet coal, yet very few yards provide a cover for their fuel. The coal bill is one of the chief items of expense to the average clay manufacturer.

Aside from the loss of heat, it is well to keep the coal under cover as much as possible, for wet coal introduces steam into the kilns in such a manner as to cause serious discoloration and other difficulties which the progressive brick and tile maker is most anxious to avoid. Therefore, it is well to watch where your coal is heaped.

SOME LEGAL DECISIONS.

Employes Expected to Use a Reasonable Degree of Common Sense, But Entitled to Certain Protection.

The employe, whether young or old, who earns his bread by his daily toil, is rightly entitled to be protected from pitfalls in his path and from dangers which are not apparent. Employers who set men at work about complicated machinery are justly charged with the duty of explaining to inexperienced or youthful employes any dangers which exist about such machinery, and which are not apparent to employes of like apparent age and experience while exercising ordinary care. Nevertheless, the law does not expect the unreasonable. It does not require the employer, the Supreme Court of Wisconsin says, in Hynes vs. Company, 132 Northwestern Reporter, 889, to treat an intelligent employe as if he had parted company with his ordinary reasoning powers, or checked his common sense at the parcel room when he entered upon his work; in a word, it requires the employes of ordinary intelligence to know and act upon those simple natural laws and physical facts which are universally acted upon by persons of like apparent intelligence in the ordinary affairs of life.

Shipper Without Right of Action on Contract.—The Eastern Supreme Court of Georgia holds, in Wilensky vs. Railway Co., 72 Southeastern Reporter, 418, that a shipper, who is both consignor and consignee, cannot maintain against a carrier an action on contract for the value of goods consigned to the carrier for shipment and not delivered, when the carrier tenders the goods at destination in a damaged condition, but refuses to deliver them unless the shipper pays the usual freight charges, notwithstanding the damages to the goods amount to more than the freight charges, and the shipper demands that the damages to the shipment be offset against the freight bill, on the theory that the refusal to deliver under the circumstances is a breach of the contract of carriage.

Trade-Mark Infringement Defined.—Trade-mark infringement, a United States Circuit Court holds, 190 Federal Reporter, 285, is the use by another, for trading purposes, and in connection with goods of the kind as to which the complainant's exclusive right exists, of a mark identical with his, or colorably resembling it. The wrongful imitation need not be exact or perfect.

Time for Shipment Under Contracts for Goods.—With merchants, time of shipment, when particularly provided for in the contract, the Appellate Court of Alabama says, in Clauss, Etc., Co. vs. Company, 56 Southern Reporter, 49, is regarded as a warranty, a condition precedent, upon the breach of which the aggrieved party may repudiate the entire contract. "Immediately" as employed in such contracts, means, ordinarily and unexplained, "forthwith; at once." But while the celerity implied in such terms as "immediately," "forthwith," "at once," among others, excludes the idea of reasonable time as that is understood in legal parlance where no time is specified for shipment or delivery, yet some appreciable time must elapse on orders for shipment "at once," etc., and such necessarily lapsing time would be a reasonable time in a sense referable to the urgent words of the order. Where the contract designates the means of carriage, the seller must conform to the direction, if not impossible, and, if he fails to do so, he has not met his obligation under the contract.

ABRASION TESTS OF BRICK.

Relative Losses With Old and New Style Rattlers and With Cubical and Spherical Shot.

In studying the matter of abrasion test of paving brick in connection with the preparation of standard specifications for the American Society of Municipal Improvements and the Association for Standardizing Paving Specifications, E. H. Christ, of Grand Rapids, Mich., who was chairman of the committee on brick paving of both those societies, conducted a considerable number of experiments, using both the old style rattler and the new one recommended by the National Paving Brick Manufacturers' Association, using cube shot in the old rattler and both cube and spherical shot in the new rattler. The results of these tests are given herewith to show the difference, as indicated by these tests, between abrasion loss in the new and in the old rattler under apparently similar conditions.

In the first 102 of these tests, samples of brick as nearly the same as possible were placed nine at a time in each of the two rattlers, and 51 of such tests were made in each rattler, but with this difference, that while cube shot were used in the old rattler spherical shot were used in the new. In one pair of tests the old rattler showed a loss .1 per cent greater than the new rattler, but in every other case the new rattler gave the greater loss, this varying from a maximum of 7.5 per cent to a minimum of .1 per cent, the average difference being 3.4 per cent. The 51 tests with the old rattler gave an average loss of 14.7 per cent, and the same number of tests with the new rattler gave an average loss of 18.1 per cent. This difference of 3.4 in the percentages of loss really amounted to an increase of about 23 per cent in the amount of loss due to the use of the new rattler and the spherical shot.

The next 50 tests with each machine were conducted using cube shot in both rattlers, with nine brick in each test. In this case the loss in the new rattler exceeded that in the old in 29 cases, was less than that in the old in 19, and the two were identical in two cases. The average loss in the old rattler was 14.94 per cent, and in the new rattler 15.55 per cent, a difference of .61 per cent, or an actual increase in loss of weight of 4.06 per cent. The maximum difference between the two machines in any one pair of tests was an excess by the new machine of 4.0, and an excess by the old machine of 2.6.

The next ten sets of experiments were made with each set consisting of two tests of nine brick each with cube shot in the old rattler and one test with 15 brick and no shot in the new rattler. This showed about 6 per cent more loss in the new rattler than in the old in each case except one, where the difference was about 10.5 per cent.

The last 50 sets of tests were made with cubical shot in the old rattler and spherical shot in the new, there being two tests in the old rattler of nine brick each to one in the new rattler with ten brick. These showed a percentage of loss in the old rattler averaging 15.74, and in the new rattler averaging 19.4, a difference between the two of 3.30 per cent of loss, or a loss in the new rattler 21 per cent greater than in the old.

The brick used in these tests were 3½ or 3¾ by 8½ or 8¾ by 3¾ or 4. The corners were rounded with radii which in some cases were three-eighths and in other five-sixteenths of an inch.

These figures are given to serve as a guide in specifying loss by the abrasion test when made with the new rattler on brick of this size. The number of kinds of brick tested and the number of tests made are not considered sufficient to cause these figures to be considered as more than tentative, to be used until more exhaustive tests can be made.

Another set of 90 tests was made to endeavor to discover what difference, if any, there is between the abrasion of bricks of different shades. Light, medium and dark bricks were tested, thirty charges of each, each charge consisting of ten bricks, given 1,800 revolutions in one hour. The mean loss of the 300 light bricks was 21.15 per cent; that of the medium bricks, 20.39 per cent, and that of the dark bricks, 20.59 per cent. This shows a very slight advantage for medium and dark brick, but practically no difference between these two.—Municipal Journal.

CONNECTICUT'S NEW BRICK HIGHWAY.

Experimental Road Laid by State Highway Commission Attracts Much Attention.

Many towns and states in the East are watching with interest the working out of the experimental brick pavement which is being laid by the state highway commission on the Wallingford (Conn.) turnpike. The Springfield (Conn.) "Republican" has the following to say of the project:

"The success of the brick pavement which is being installed under the direction of the state highway commission on the road to New Haven for a stretch of a mile or two just beyond Wallingford will be a matter of much interest. The road is one which is subjected to very heavy motor travel and the manner in which the section of brick pavement stands up under wear and abuse may mean the wide employment of brick hereafter. The highway commissioner is understood to favor the construction of two main brick roads, one crossing the state from east to west, presumably along the coast line, and the other north to south, presumably between New Haven and Springfield.

"Oiled macadam roads have proved far from a complete success. While the oil has been an improvement in keeping down the dust it has not prevented the macadam surface from getting badly cupped under heavy traffic and from being expensive to maintain, in addition to which there is serious danger of skidding on freshly oiled roads as instanced in a fatal accident, recently, in which a New York motorist came to grief in New Jersey.

"In the middle west, particularly around Cleveland, brick roads have been much in use and seem on the whole to have given excellent service, although not generally laid on such careful foundations as the section near Wallingford, upon which work has been going on for some time and which should be opened to traffic before long."

BRICK STAND SEVERE TEST.

Reports Show Unusually Drastic Treatment Left Brick in Good Condition.

In speaking of the tests that were made periodically last summer as the bricklaying proceeded, at Altoona, Pa., City Engineer Engstrom recently stated that the tests made at the local laboratory subjected the brick to a severer test than they usually received at the laboratories of those who make a specialty of brick testing. For instance, bricks usually have a crust over them, and in making the absorption test it is generally the custom at the large laboratories to take the bricks as they are. Last summer they were taken from the rattler after the surface had been worn off and placed in the water for the absorption test. Nine bricks are placed in the rattler with each test, they being taken at random from the cars when the shipment arrives in the city. All the testing last summer was done under the inspection of Mr. Dillman, who had been engaged by councils and the mayor for that purpose. He assisted in the selection of the bricks. A synopsis of the test, with the dates and kind of brick tested, follows, the first figure being the result of the abrasion test, the second of the absorption test: June 13, Bessemer block, 17.0, 1.29. June 19, Bessemer block, 15.7, 2.7; same date, 16.1, 1.6. June 29, Bessemer hillside block, 15.47, 1.99; second charge, 15.59, 1.99. September 9, Bessemer hillside, 14.24, 1.15; second batch, plain Bessemer, 12.74, 1.81; third charge, 13.68, 1.19; fourth charge, 14.78, 1.18. September 1, first charge, 2.95, 1.27; second charge, 13.36, 1.04; September 12, first charge, 15.20, 2.41; second charge, 15.02, 2; third charge, 14.82, 1.72. November 4, plain Bessemer, first charge, 16.65, 1.78; second charge, 14.92, 2.32; third charge, 15.88, 2.4; fourth charge, 17.18, 2.38. November 6, first charge, 13.93, 2.48; second charge, 14.82, 2.69; third charge, 11.80, 2.14; fourth charge, 15.66, 1.92.—Municipal Journal.

THE WOOD BLOCK MENACE.

Slippery Wood Block Pavement Avoided by Teamsters—Brick the Popular Choice.

Some little time ago we published an article under the above caption, which aroused considerable interest and attention and a number of inquiries were received regarding the matter.

Since that time we are informed that the city of Lexington tried to veneer the wooden block on Main street with a combination of oil and sand but like Banquo's ghost, they would not down and are again very much in evidence, causing the drivers, on wet days, to take to the car tracks, which are paved with brick.

The following, which appeared in the Lexington Leader, tells of the serious trouble caused by this form of paving:

> **Slippery Blocks Cause Fire Horses to Fall.**
>
> The danger of the block streets on a damp day was again demonstrated Thursday morning when the ladder truck of the Central Fire Station was crossing Upper street on Short. One of the horses slipped on the slippery blocks, causing both to fall heavily. Had the wagon been going at a rapid speed, it would have caused a serious accident as the wagon was very heavy, making it difficult to stop quickly, and as a result, one of the horses was badly scratched.
>
> This accident revises memories of the large number of accidents which happened since the block street was laid around the Courthouse. Each year the loss of horses falling on this street is heavy, out of the number a large percentage being so severely injured that it is necessary for them to be killed.

CREOSOTE BLOCK HIGHER.

Prices of Asphalt and Creosote Block Raised in Chicago.—Specifications Changed.

Prices of asphalt and creosoted block pavements have been boosted in Chicago so that the Board of Local Improvements is considering not letting any more contracts this year, according to the "Chicago Tribune." The average cost of a square yard of asphalt pavements, for which contracts have been awarded this year, is $2.06. Last year it was around $1.72.

The increase in the cost of creosoted block has been somewhat less. The highest price paid this year was $3.51 a square yard. That is between 30 and 35 cents advance.

"The price of asphalt pavements last year was too low," explained President Schilling. "Few of the contractors made money, and I believe some of them lost money. It is my guess they are attempting to regain what they lost last year.

"On creosoted block pavements we changed the specifications to eliminate creosoted block oil and require real creosote oil. That may have jumped the price some, but cannot be responsible for all the increase."

THAT PAVING COMBINE.

Ill-advised Statement of Southern Newspapers Not Borne Out by Facts.

The city of Tampa, Fla., is crowing because it claims it has broken up the paving brick combine, and the following ridiculous article which appeared in the "Times-Union Bureau" is the result:

> Feeling that it was being robbed by the paving brick combine, the board of public works in the spring adopted a new policy, that of buying its own brick and letting only the contract for laying them to paving contractors. The scheme has worked very well. The board bought 1,000,000 brick in the spring, paying for them at the rate of $28.75 per thousand. They came from Baltimore by boat and the brick are very satisfactory. The paving projects the board has under way on six streets will call for 980,000 of them and the extension of Central avenue will need 480,000 more. So well pleased is the board with its effort to break up the paving combine that it is going to advertise for another half million bricks and for 20,000 lineal feet of curbing, for which it pays 30 cents a foot.

It is well known that there is no such thing as a paving brick combine anywhere in the United States, but of course it is to be expected that any factory located so that brick can be loaded directly into vessels and reach a destination by water can successfully compete with any factory depending on railroad transportation. The freight alone from Ohio factories to Tampa is more per thousand than the delivery price at which Tampa obtains her brick by water.

Brick to Supplant Wood Block.

As a result of the rejection of wood block, which were shipped to Missoula, Mont., by the Kettle River Co. for use on Cedar Street, it is probable that the street will be paved with brick furnished by the Denny-Renton Clay & Coal Co., of Seattle. The Missoula city officials are much disgusted with the treatment they have received at the hands of the wood block company and as the foundation prepared is of concrete, it is believed that brick will be substituted for the wood block.

Big Brick Plant for Brisbane.

A big undertaking for supplying the building trade of Queensland with an adequate brick supply is in progress at Enoggera near Brisbane. It is being prosecuted by the Brisbane Builders' Brick & Supply Co., which is spending something like £25,000 upon the erection and equipment of works which will eventually have a capacity of 85,000 brick a day.

COST AFFECTED BY QUALITY.*

Trade Demands Best Tile—Wise Manufacturer Refuses to Sacrifice Quality to Price.

By W. N. Turpin.

This talk is intended in a measure to draw some comparison between quality and cost, for quality governs cost and cost is a dominant feature in the high standard of quality.

The entire country in all its manufacturing branches demands the "highest standard of quality." To attain this, the cost is affected, to be sure, but by actual tests, the difference in the cost of turning out good tile or poor tile, is wholly insignificant in comparison with the benefits derived. What we manufacturers want in our plants are boilers, engines, conveyor belts and other equipment that will give the best wear and service. How many of you are using fire brick that cost less than $23.00 while the country is flooded with $17.00 and $19.00 per thousand quality? I know some manufacturers who claim they save money by paying $30.00 per thousand for a highly refractory fire brick. There are many counties demanding the very best tile they can get, and positively refusing to take bids on inferior tile without consideration as to cost. The farmer also, is demanding a better made and harder burned farm drain tile and that commodity which has attained to the highest perfection of manufacture and permanency will take the lead, and hold it.

Good Clay Essential.

It is quite essential to have a good clay or shale in order to successfully manufacture and vitrify large tile. Many of the clays used at the majority of plants are of an excellent quality for the smaller sizes but are not so well adapted for making the larger tile. Right here can be summed up the most detrimental feature to the large tile industry—the machinery in such plants does not compress the clay sufficiently to form a close body, even should the clay be plastic enough and the cheaply constructed kilns often fail to stand the high heat sufficient for vitrification. It would seem that such plants might profit by confining their manufacture to the sizes of tile for which their clay and equipment is best adapted. During the past two years, quite a few plants have been built by promoters. Unscrupulous stock jobbers have sold stock for plants where there was no suitable clay, representing that the existing tile plants were making fabulous profits and even going so far as to give the cost of manufacture, the selling price and net profits per ton, which have been exaggerated out of all reason.

It is not my purpose to draw a cost line, as between the several grades of tile. Every sales manager knows the competition he has to meet. He also is aware that he not infrequently loses an order which goes to a competitor at a higher price than he asked. By this, we are strongly impressed that it is not so much a matter of cost as quality. Prepare the clay properly, use up-to-date machinery, and burn the stuff done, bake it good and hard—why my mother used to bake beans about as long as some companies bake their tile. Then assort it carefully, and see that nothing goes out but the tile that are safe and sound. The buyer is willing to pay the slight difference in cost. Don't overlook that fact. A gentleman who hails from New York has been instrumental in building a plant in Minnesota, and the members of the firm were told that they would be able to take hollow block, fireproofing or drain tile, direct from the machinery, run it through a continuous kiln on an endless belt, producing vitrified ware, all within the short period of four hours. This is indeed a marvel to us who consume from three to seven days in burning a kiln of tile.

High Finance Process.

I have been watching for this "high finance process" of manufacture to light somewhere in Iowa. If it ever does, the cost feature as compared with the high standard of quality will evidently be shattered. By the personal efforts of Iowa men, three large tile plants were built here, some three or four years ago. The buildings are of brick, well built, and equipped with the latest machinery, so as to produce the highest standard of quality known to our profession, enabling our state to put forth the claim that our clay equipment and finished product is second to none in Illinois or Missouri. The building of these plants did not affect those already here, except to spur them on to a stronger effort to produce a better hard-burned tile, and as these larger plants are equipped largely for making large tile, they do not enter into competition with the factories producing the smaller sizes. It is quite proper that we should work in harmony to build up this old state, as great a reputation in manufacturing industries as it now enjoys along agricultural and educational lines.

Manufacturers should free their minds completely from the idea that the cheaper they can make tile, regardless of quality, the easier it will be to sell it.

Put forth your best energies to make tile that is permanent, for the time is coming when the demand for drain tile in the state will gradually decline, and when it does, those factories getting out the poorest tile will be the first to close down and go out of business. Burned clay has a world-wide reputable record; let us as manufacturers not fail in our efforts to hold aloft that banner of High Standard of Quality, looking ahead, as in the past, that we may maintain the ground already gained.

Fluctuation of the Tile Industry.

The recent report issued by the U. S. Geological Survey shows that the value of drain tile increased constantly for 10 years up to 1910 and then showed a large decrease —15.05 per cent—the largest proportional decrease of all the clay products in 1911. This decrease is thought to be due to the unusually dry season, obviating the immediate necessity for the use of drain tile.

The Civil Service Commission, at Washington, announces an examination for Oct. 23 of male candidates for the position of laboratory assistant in ceramics, in the Bureau of Standards, Department of Commerce and Labor, at $900 to $1,200 a year.

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*Paper read before last annual convention of Iowa Brick and Tile Association, Ft. Dodge, Ia.

SAND LIME DEPARTMENT

FLORIDA ENTERPRISE CHANGES OWNERS.

Silica Brick Plant at Plant City, Fla., Re-Equipped with Modern Up-to-date Machinery.

The Roux Composite Brick Co., of Plant City, Fla., which is capitalized at $30,000, a few months ago took over the plant and holdings of the Plant City Sand Lime Brick Co., and under the direction of W. J. Carmichael, of Willoughby, O., brickmaking machinery of the latest type was installed for making brick under the Carmichael process. The process of manufacturing the brick is described by the Plant City Courier as follows:

"The silica or sand, which forms the basis of the brick is obtained from a bed of almost pure silica and mined with a six-inch centrifugal pump driven by an H. S. & G. engine, similar to the familiar method of mining pebble phosphate in this section. By this method fifty tons of sand per hour are mined and thoroughly washed and screened. The sand is first carried to the wet bin, where, when the bin is filled it is allowed to dry out, each bin holding sand enough for six days' run.

"Lime, which plays an important part in the manufacture of the brick, is crushed, then hydrated in large vats, each holding a week's run, and allowed to stand several days before using. Mixed with cement, the lime and silica is dumped into a large revolving 'wet pan' and ground together for several minutes by two large 5-ton 'mullers.' After thorough pulverization the mixture is dumped and carried by an elevator to the press.

"The press which is specially manufactured by the American Clay Machinery Co., has a capacity of 14,000 brick per day. Each brick is subjected to a pressure of 75 tons, three times the pressure obtained under the old system of making brick. From the press the bricks are rolled on cars into large cylinders, where they are steamed for ten hours at 140 pounds pressure, this being the last step in the process of manufacture. The company will shortly have machinery in operation giving the plant a capacity of 54,000 brick per day.

"C. H. Carmichael, manager of the plant, is an experienced brick man who has studied and been engaged in brick manufacture in Hawaii, Montana, Ohio, and other parts of the world. W. J. Carmichael, a large stockholder in the company, is connected with the American Clay Machinery Co., the largest manufacturers of brick machinery in the world, and the Carmichael process under which Plant City brick are now made is simply an accumulation and combination of the good points of various systems of brick manufacture under the direction of trained brickmakers."

Buffalo's Latest Monument, the General Elec. Co.'s Building, faced with Sand Lime Brick made by the Buffalo Sandstone Brick Co.

NEWS OF THE SAND-LIME INDUSTRY.

The new plant of the Worcester (Mass.) Sand Lime Brick Co., at West Auburn, Mass., has been placed in operation. It is said to be one of the best equipped sand-lime plants in the country.

Reports from the members of the American Association of Manufacturers of Sand Lime Products to Secretary W. E. Plummer, Jr., Buffalo, N. Y., indicate that everyone is busy and it looks like a "banner year" for the industry. Prospects are that most of the factories will be obliged to run throughout the winter to keep up with their orders.

The immense factory buildings of the Brush Run-About Co., at Detroit, Mich., which cover a large area of land, were made of sand-lime brick manufactured by the Church Brick Co., Sibley, Mich., as were also the buildings comprising the plant of the Chalmers Motor Co., at Detroit, Mich.

Sand-Lime Convention for 1912.

It has been given out that the annual convention of the American Association of Manufacturers of Sand Lime Products will be held at Toronto, Dec. 3rd and 4th.

GROWING LIST OF CONCRETE DISASTERS.

Three men were dangerously injured when the concrete roof of a new theatre building at Dallas, Tex., collapsed, September 25th.

A three-story 50-ft. front building nearing completion in Montreal, Canada, collapsed last month. The cause of the disaster was the failure of the heavy concrete pier in the center of the building. Fortunately no workmen were in the building, otherwise, without doubt, there would have been many injured.

MUCH ACTIVITY IN POTTERY CIRCLES.

Death Takes President of Association—Sanitary Plant for East Liverpool.

The death of John Pope, of Trenton, president of the United States Potters Association, removes from the domestic pottery trade, one of its most noted characters. Mr. Pope was elected president of the Association at the last meeting of the organization which was held in the Hotel Raleigh, at Washington, D. C., last December. At that time Mr. Burgess was re-elected first vice president and Harry D. Wintringer, president of the Steubenville Pottery Co., of Steubenville, O., was elected second vice president. The unwritten law of the association is that the second vice president shall succeed to the presidency, and this would insure the election of Mr. Wintringer as president of the Association at its forthcoming meeting.

The formation at Trenton, of a labor union composed of dust clayworkers may mean that the electric porcelain workers of the United States will be "organized" before the year's end, and that all electric porcelain plants will be included in this organization. Whether or not the organization will come under the direction of the National Brotherhood of Operative Potters, remains to be seen.

Decorating machines are being installed in several western potteries which will greatly increase their output, so far as decorated ware is concerned. Scouring machines are being installed in three other plants, which the manufacturers assert will decrease the number of "thirds" more than seventy-five per cent. It is also said that only two women are required to operate one machine and that the production of these machines will be sufficient to keep two dippers employed steadily, with less than eighty per cent of the labor now required.

Five-Kiln Pottery to be Erected.

The proposition to erect a five-kiln pottery at Washingtonville, Columbiana county, Ohio, is assured. Residents of that place have raised a fund of $20,000 and the company, composed of East Liverpool parties, will take the balance of the $50,000 capital stock. As the main street of Washingtonville is the dividing line between Columbiana and Mahoning counties, it has not been determined in just which county the plant will be located. Sites are obtainable "on both sides of the street."

Every pottery at Sebring, O., is working to its capacity, but the scarcity of help in some departments is very acute. During the last eight months, dozens of general ware clayworkers have left that branch of the trade to take positions in the sanitary branch, and this has left many vacant benches in the domestic lines. A shortage of workmen is also reported in some of the other potteries in Eastern Ohio.

It is reasonable to believe that operations will not be resumed at the Warner-Keffer pottery plant in East Liverpool at least this year. J. R. Warner, who was at the head of this company has gone to California, where he expects to locate. Harry A. Keffer who was also a member of the firm has become identified with the sales department of a tile manufacturing company. Fred Kline, who was in charge of the sales department of the company is now general manager of the Colonial Pottery Co. The Warner-Keffer plant was bought in by bondholders, who have not expressed a desire to operate the pottery.

Scarcity of Workmen.

Although there has been a decrease in the number of domestic pottery manufacturing plants during the last few years, so far as numbers are concerned, yet there is a scarcity of workmen in this line of business. Not a few operative potters have left the domestic branch of the trade to go into the sanitary branch, and workmen from the East Liverpool district have taken places in the sanitary shops in California, Columbus, Kokomo, Wheeling and Evansville. It is asserted by some domestic pottery manufacturers, that the sanitary branch of the trade is showing a bit more advancement, so far as production is concerned, than are the domestic and general ware branches.

In the Trenton district, there is little general ware manufactured these days, when the records of former years are taken into consideration. In the place of general ware plants, sanitary potteries have sprung up, until now Trenton is the largest market in the world for sanitary pottery.

With three idle general ware potteries in the East Liverpool district, and no sanitary plant, it is possible that the effort now being made to establish a sanitary shop will prove successful.

J. A. McIntyre has about completed the erection of a new pottery plant at Medicine Hat, Alberta, Canada. While no general domestic line of pottery will be made there for the present, it is reported upon authority that a line of stone ware and art pottery novelties will be manufactured from native clays.

A new kiln and an additional pressing shop, occupying a site 120 by 40 feet, are being built at the plant of the Camden (N. J.) Pottery Co., this improvement being necessitated on account of a remarkable increase in business. With this addition, the firm will be in a position to give work to probably 50 more workers throughout the entire plant.

The South Paris China & Pottery Co., of Paris, Tenn., is the most recent pottery corporation to be formed, and it is the only one of its kind in that state. While there are a few stoneware and jug shops in Tennessee, there are no plants manufacturing general ware. The new company has been formed with a nominal capital stock of $10,000, which will be increased, so it is reported. Native clays will be used. These Tennessee clays are now largely used by pottery manufacturers in the northern pottery districts.

The officials of the Nelson McCoy Pottery Co., at Crooksville, O., have placed all the employes of that plant under the protection of the workmen's compensation act of Ohio—being the first pottery corporation in Ohio to do so. This action means that in case of death or injury, while at work in this pottery, the employes or their heirs will be compensated by the State of Ohio. There are about 100 employes. The Nelson McCoy Pottery Co. was formed several years ago and is manufacturing a line of special ware, stoneware and specialties.

After being idle for three weeks on account of floods in the vicinity damaging the plant, operations have been resumed by the Cannonsburg, Pa., pottery, which is controlled by Will S. George, who is also president of the W. S. George Pottery Co., of East Palestine, O.

Contracts have been let by the Burley & Winter Pottery Co., at Crooksville, O., for the erection of a large additional stock room occupying a site 175 by 300 feet. The addition will be built of brick and structural steel. The pottery is now under the management of John C. Talkenberg.

Greatest Increase in Electric Supplies.

In the report, recently issued by the Geological Survey, it is interesting to note the fluctuations in the various branches of the industry. The greatest increase was in the value of porcelain electrical supplies, from $470,355 to $4,232,101, or 800 per cent. Sanitary ware increased from $2,211,877 to $7,031,458, or 217 per cent; stoneware, etc., from $2,130,263 to $4,120,608, or 193 per cent; china, etc., from $1,297,978 to $2,057,985, or 158 per cent; white ware from $6,376,351 to $14,366,251, or 125 per cent.

The value of the red earthenware was $893,678, an increase of only $130,000 since 1899. As this is made from the common variety of clay it is the most widespread branch of the pottery industry, although its output is of less value than any of the other classes of pottery. The leading states, with the value of their output, were Ohio, $233,060; Pennsylvania, $159,420; Massachusetts, $150,038.

Stoneware, including yellow and Rockingham ware, to the value of $4,120,608 was manufactured. Ohio leads with an output of $1,758,785 worth, or 42 per cent of the total product; Illinois follows with $832,813 and Pennsylvania was third with $304,998.

White ware, including cream colored ware, white granite, semi-porcelain ware and semi-vitreous porcelain ware, leads all others in the total value of the output, which in 1911 was $14,366,251. This class includes the general household ware. Ohio has been the leading producer of these wares for many years, and in 1911 the value of its output was $9,612,315, or 66.91 per cent of the total output of white ware. West Virginia was second with $1,920,294 and New Jersey third with $1,148,904. All the other states combined only produced $1,684,783 worth.

China was reported from only four states. The total output was valued at $2,057,985, over one-half of which, or $1,105,278, was manufactured in New Jersey. New York was second with a value of $730,983 and Pennsylvania third with a value of $216,724. Commercially the china output is of little importance, but from an aesthetic standpoint is perhaps the branch of the pottery industry deserving the most encouragement.

The value of the sanitary ware manufactured in 1911 was $7,031,458, of which New Jersey alone produced $4,898,588, or 69.67 per cent of the total. West Virginia followed with $814,599; Indiana, $549,470; Ohio, $378,779; Pennsylvania, $215,590.

Porcelain electrical supplies were manufactured to the value of $4,232,101, of which Ohio produced $1,610,925, or 38 per cent. The next largest producers were New York, $988,716 and New Jersey, $913,921. Miscellaneous pottery to the value of $1,816,479 was manufactured, of which Ohio produced $1,181,401; New Jersey, $220,425; West Virginia, $79,173. This includes art and chemical pottery, craquelle porcelain, faience, Guernsey earthenware and a great number of pottery manufactures not coming under any of the general classes.

Ohio leads all the other states in the value of its output of pottery, which in 1911 was $14,775,265, or 42.8 per cent of all the pottery produced in the United States. The principal product of this state is white ware, which made up 65.06 per cent of the value of its entire product in 1911.

ONE HUNDRED BUNGALOWS.

The encouragingly large sales of the "Bungalow Book," showing one hundred brick bungalows, which is published by the Building Brick Association of America demonstrates that brickmakers appreciate being able to show their prospective customer just what attractive but inexpensive fireproof homes can be constructed of brick.

The "Bungalow Book" is listed in "Brick and Clay Record's" "Books for Sale" and the orders have been coming in, in gratifying numbers. If you have not already secured a supply, you should avail yourself of this opportunity to extend the use of brick for home building and order a generous supply for distribution to the trade, in your locality. Price 50 cents, single copy. Write for special rates for quantities.

The Brown Instrument Co., and its associate company, the Keystone Electrical Co., with general offices at Philadelphia, Pa., have found it necessary to arrange for triple the amount of space after the first of the year than they now occupy. These two companies have found a very large increase this year in the demand for their pyrometers, thermometers and electrical instruments, and an enlargement of their factory is necessary to meet their constantly growing business.

Seeks to Eliminate Fellow Servant Clause.

The Department of Labor of the state of Minnesota will ask the coming legislature to do away with the fellow servant risk, holding employers responsible for accidents which come from the act of a fellow servant. If the legislature passes an accident compensation code, this will doubtless be included, since every draft of such a law includes the elimination of the fellow servant exemption.

PRODUCTION OF MAGNESITE.

Opening of Panama Canal Likely to Increase Output by Decreasing Freight Rates.

The opening of the Panama Canal may bring about an important increase in the magnesite production of the country. The consequent reduction in freight rates should mean increased markets in the United States for this mineral, which is used extensively in the manufacture of refractory brick shapes, crucibles and furnace linings and is also used in boilers to prevent scale, where sulphurous water is used.

The production of magnesite fell off, in 1911, according to the U. S. Geological Survey, the output being 9,375 short tons, valued at $75,000 as against 12,443 tons valued at $74,658 in 1910. At present the average value of California magnesite, at the mines, is estimated at $8.00 a short ton, but owing to the distance from the principal markets of the eastern United States and the Mississippi valley, the imported article is used principally, in spite of the recognized higher grade of our own magnesite and the large undeveloped deposits of this material in California and other points in the U. S. Imported magnesite is quoted at $10.00 to $11.00 per long ton (equivalent to about $9 to $10 per short ton) for the raw and $30.00 to $35.00 per long ton for the calcined and powdered product at New York. The imports of 1911 amounted to 122,075 short tons of calcined and 12,974 short tons of crude magnesite.

When your brick are being used in the construction of a building in your town you should place on a sign in a conspicuous place: "These brick were furnished by the .... Brick Co."

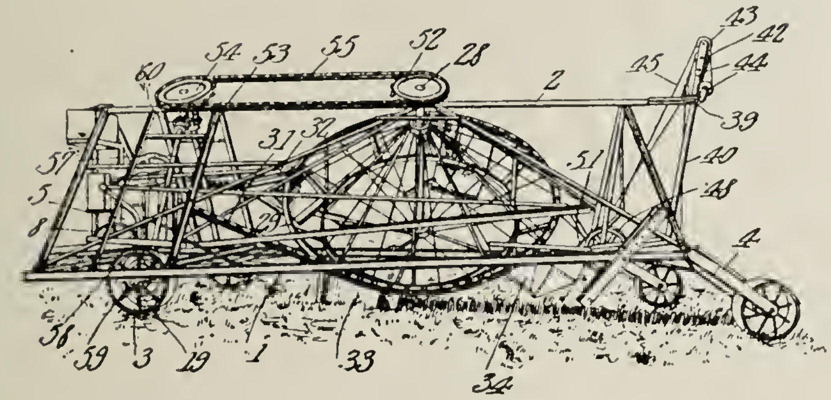
RECENT INVENTIONS of CLAY MACHINERY

Up-to-date Time and Labor-Saving Devices Reduce Cost of Producing Burned Clay Building Materials

1,003,046. DITCHING-MACHINE. D. Maurice Hartsough, Minneapolis, Minn. Filed July 1, 1910. Serial No. 569,995.

A ditching machine comprising a frame, a rotor journaled upon the frame and having its axis at an acute angle to the horizontal, a scoop mounted upon the rotor and having a hinged side arranged to swing toward the axis of the rotor when the scoop arrives at dumping position.

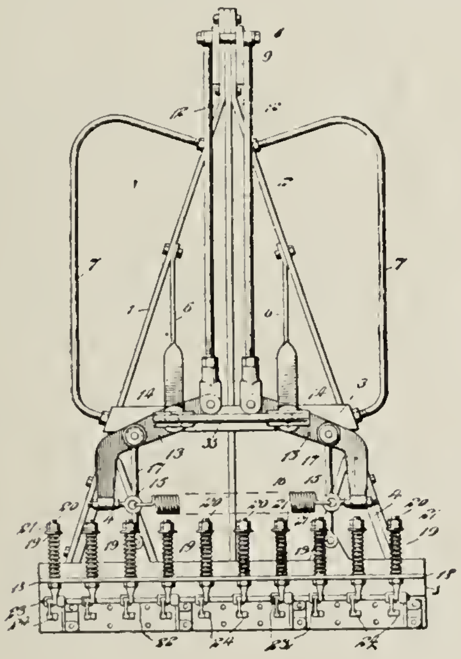
In a ditching machine having a journaled rotor, a scoop carried by the rotor and having a hinged side, a bridle chain connecting the hinged side with the body portion of the scoop, a spring exercising its tension upon the intermediate portion of the bridle chain, and a frame located upon a fixed support and adapted to engage a portion of the scoop to open the hinged side.



999,774. BRICK-HANDLING MACHINE. William H. Francis, Cherryvale, Kans. Filed Oct. 21, 1908, Serial No. 458,781. Renewed Dec. 22, 1910. Serial No. 598,821.

A machine for handling brick, comprising a main frame, projecting arms thereon, clamps movable independently of and substantially parallel to said arms, and means for automatically varying the clamping action of the said clamps at their ends.

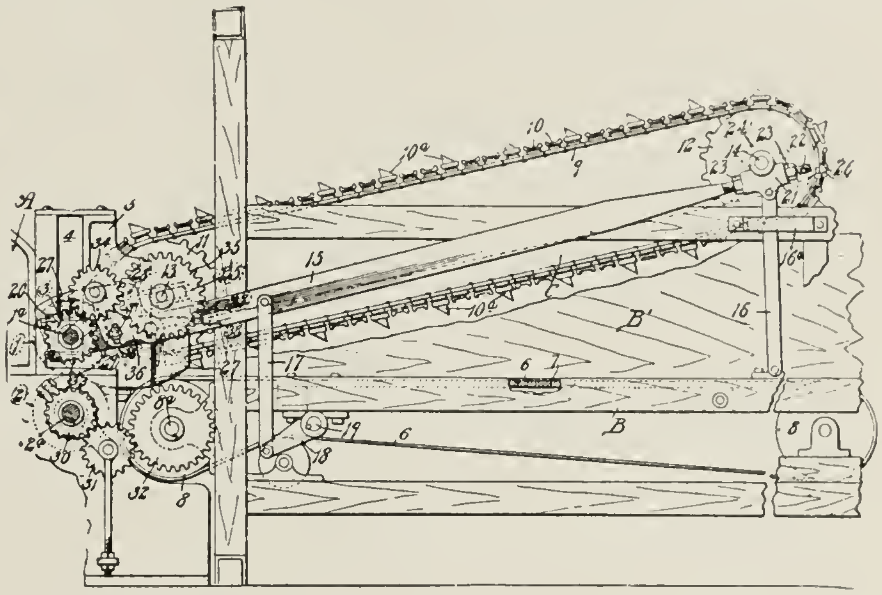
A machine for handling brick, comprising a main frame, projecting arms on the lower end of said frame, clamps movable independent of and substantially parallel to said arms, means for supporting each clamp pivotally at a point between its ends so that the said ends may be automatically variable in their clamping action, mechanism for actuating the clamps, and individual elastic devices interposed in said mechanism to compensate for variations in the spaces between the brick.



1,004,126. FEEDING MECHANISM FOR DISINTEGRATING-MACHINES. Milton F. Williams and Edward H. Frickey, St. Louis, Mo., assignors to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo., a corporation of Missouri. Filed Aug. 21, 1908. Serial No. 449,751.

A feeding mechanism of the character described, comprising a stationary frame, a lower conveyor and a lower feed roll, an upper conveyor and an upper feed roll, bars that form a support for the shafts of the upper conveyor and the shaft of said upper feed roll, rock arms pivotally connected to said stationary frame and also pivotally connected to said bars, a rock shaft, arms carried thereby and links pivotally connected to said arms and to the lower ends of the bars.

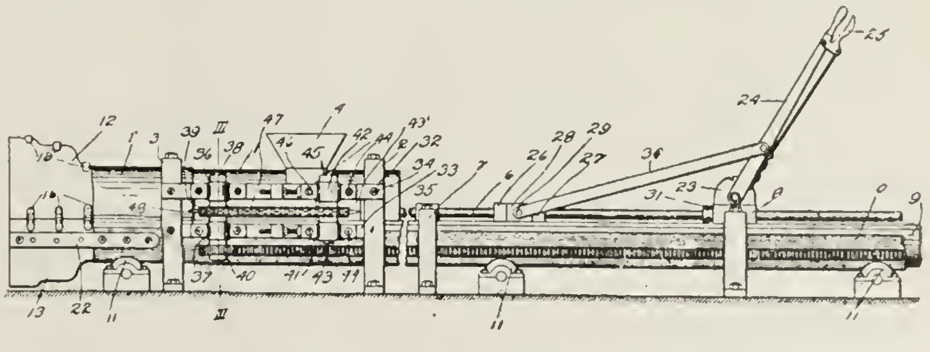
A feeding mechanism of the character described, comprising a lower conveyor, a rockable frame having shafts rotatably mounted therein, an upper conveyor mounted on said shafts, a feed roll having a gear mounted thereon, a gear mounted on one of the shafts of the upper conveyor, a gear intermeshing with both of said gears, and means for adjusting the position of the intermeshing gear, and also the gear mounted on the conveyor shaft.



1,007,974. PIPE-MAKING MACHINE. Walter A. Rees, San Antonio, Tex. Filed Sept. 29, 1910. Serial No. 584,403.

A pipe-making machine comprising a feeding cylinder having a supply opening, a screw located within the cylinder and having an integral core portion at one end projecting through the end of the cylinder body, a mold member forming a continuation of said cylinder and surrounding said core, and means for actuating said screw.

A pipe-making machine comprising a feeding chamber, a mold member comprising a lower tray portion movable relative to the feeding chamber, an upper cap portion fixed relative to the feeding chamber, a bell member comprising a lower portion fixed relative to said tray portion and having a top member hinged to said lower portion, a screw revoluble in the feeding chamber and having a core projecting into the mold member, a plug located in the bell portion of the mold and having an off-set inner face and provided with a central aperture, into which said core may be projected, and means for retracting said screw and core for the purpose set forth.



TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

Jas. G. Goulding, secretary and treasurer of the Trent Brick Co., died recently at his home in Trenton, N. J. The direct cause of his death was dropsy.

The Sparta Clay Works, Sparta, Mich., has established a downtown office in the Opera House Building, with H. B. Fox in charge.

A recent decision of the United States Interstate Commerce Commission, declares that "a brick is a brick" and that there should be no difference in the rate on different classes of brick. The Canadian Railway Commission has decided that while it has no jurisdiction over the American roads concerned, it has over the Canadian and has ordered a reduction in rate from $2.00 per ton to $1.68.

Fourteen brick plants in the Kansas gas belt have been closed, because of the gas shortage, and will not reopen this winter. The plants affected are at Altoona, Chanute, Cherryville, Peru, Coffeyville, Iola, Tyro, Caney and Mound City. Hundreds of men have been thrown out of employment and as only six plants are now in operation in Kansas, dealers say that a shortage in brick will be the result.

From throughout the country come reports of delays in shipments of clay products, occasioned by a shortage of cars and owing to the demand for box cars in the Northwest to ship the immense grain crop, the situation has become critical.

We are informed that the Copeland-Inglis Shale Brick Co., Alton, Ala., is enjoying a very prosperous season and has had such a demand for paving block that it has been impossible to keep up with the orders. The company is installing a third dry pan, which will give it a capacity of 1,200,000 brick per month.

C. F. Beckwith, formerly connected with the ceramic department of the University of Illinois at Urbana, Ill., is now identified with the Tregillus Clay Products Co., Calgary, Canada, which company has plans for the erection of two plants at Calgary. Work is progressing rapidly on the first and largest plant and it is thought that by the first of November brick will be made.

The American Terra Cotta and Ceramic Co. is experiencing an unusual run of rush work and as a result many workmen are working overtime at the plant at Terra Cotta, Ill.

An interesting exhibit of hollow clay tile was displayed at the recent "Made-in-Houston" exposition at Houston, by the Vandeveer-Stoy Clay Products Co. Fireproofing made by this company is being used in the construction of the new Rice Hotel building at Houston.

A shortage of cars has been giving some trouble to the Federal Betterment Co., whose plant, near Cherryvale, Kan., has been turning out nearly a million brick a month during the summer. The shipments from that plant average about five or six cars per day.

The Huneke brick plant at Lockesburg, Ark., is producing from thirty to forty thousand brick a day and the concern has orders booked which will take the output for some time.

A meeting of the southeastern Kansas brick manufacturers was held recently at the Gold Dust Hotel, Fredonia, Kan. Since a number of the plants are not running at present, the representation was somewhat less than usual.

A fire, supposed to have been caused by an explosion of oil in the boiler room at the plant of the American Pressed Brick Co., 6500 St. Charles Rock Road, East St. Louis, Ill., caused a loss estimated at about $15,000.

A disastrous fire destroyed the main building of the Fort Scott Brick Co.'s plant at Fort Scott, Kan., on Oct. 4th. One hundred men were thrown out of employment and the loss is estimated at $100,000, partially covered by insurance.

M. W. Campbell, formerly of Shepherd, Mich., has been chosen manager of the Luverne (Minn.) Pressed Brick Co. to take the place vacated by C. W. Sheriff.

The Spokane Gas & Fuel Co. constructed an artistic booth of fire brick along the midway at the Spokane, Wash., street carnival, where it demonstrated various gas cooking and heating devices. The structure was one of the most attractive ones along the row and caused much favorable comment.

W. H. Grothe has burned five kilns of brick at his rebuilt plant at York, Pa. The brick were burned very satisfactorily and Mr. Grothe is much pleased with the outcome of his brick manufacturing venture. He is using the Martin brick machinery. Power for the plant is furnished by a 140 h. p. engine and two 125 h. p. boilers.

The Clay Products Co., Hutton building, Spokane, Wash., recently acquired the pressed brick plant at Sandpoint, Wash. Many improvements were made to the plant, which was placed in operation October 1st.

The contract for the erection of the prize bungalow which the Clay Products Exposition Co. gave away during the show last March, has been awarded to F. Persons, Seventy-ninth street and Exchange avenue, Chicago. The bungalow was given to Mrs. H. C. Leemon, and she has procured a lot at 7200 Yates avenue, near the South Shore Country Club, where it will be built.

The Salt Lake City, Utah, Tribune, says: "A pleasant surprise was sprung upon the building community of Salt Lake City by the Pacific insurance board when it announced a cut of 33 per cent in the insurance rate on brick mercantile buildings, and extended the time when such risks would be taken from one to three years. The reduction will mean a big saving to business men."

Fire, supposed to have caught in the dryer, partially destroyed the big tile plant of the Standard Clay Co. at Little Falls, Wash., recently, causing a loss of about $25,000 over the insurance. The plant is owned and operated by the Standard Clay Co., of Tacoma, with offices in the Perkins building.

The Standard Clay Co. was formerly the Little Falls Fire Clay Co., but was reorganized last spring. Cyrus Peirce of San Francisco is president of the company, W. S. Dimmock is vice president and Joshua Pierce is secretary and treasurer.

Frank B. Goodman, 270 Yonge St., Toronto, Can., desires to represent several first-class face brick manufacturers. He states that the builders of Toronto are unable to get enough brick to meet their requirements. He solicits correspondence with any manufacturers desiring to enter the Toronto market.

The Taylor Iron & Steel Co., High Bridge, N. J., announces the acquisition of the Wm. Wharton Jr. & Co., Inc., of Philadelphia, Pa., with works at Philadelphia and Jenkintown, Pa., and its subsidiary corporation, the Philadelphia Roll & Machine Co.

The plant of the Liberal Vitrified Brick & Tile Co., at Liberal, Mo., has opened up under new management and is now producing a tapestry brick which is said to be of very fine quality.

Plans are being made for the Annual Convention of the Interstate Mantel and Tile Dealers' Association of the United States, which will be held in Detroit, Mich., next February.

James C. McElroy of the Southwestern Mantel & Tile Co., of Wichita, Kansas, has sold his interest to his partner, T. H. Murphy, who will continue the business.

The Hydraulic Press Brick Co. of Chicago recently purchased a six-ton Mogul motor truck to be used in the delivery of brick. Building material companies are beginning to realize the economy of the motor truck, which is rapidly displacing the slow horse-and-wagon method of delivery.

The new plant of the Key-James Brick Co. at Chattanooga, Tenn., was placed in operation recently. Hydro-electric power will be used exclusively for running the machinery, and while the present output is confined to high-grade pressed and face brick, equipment has also been installed for the manufacture of paving brick.

A bricklayers' strike is on at Regina, Sask. 150 men are out and all building is at a stand-still as a result of a demand for an increase of 2½ cents an hour. The former price was 67½ cents per hour. This is a far cry from the conditions in Austria-Hungary, where bricklayers are paid from $1.00 to $1.20 a day and are, even at that price, the best paid workers in the building trades.

Because President Taft laid the corner stone of the new home of the Boston Y. M. C. A., Chicago Bricklayers Union No. 23 has been asked to withdraw the card of honorary membership it recently gave him. The request was made by the Boston Bricklayers Union on the ground that the building was being erected by non-union labor.

The Corning (N. Y.) Brick, Terra Cotta & Tile Co. is erecting another kiln, which will make twenty in all, ten being used for brick and ten for terra cotta. The company has been having a steady demand for paving brick throughout the season.

The plant of the Norton Brick & Manufacturing Co., near Norton, Va., was burned September 25th, the machinery being practically a total loss. The insurance amounts to $4,000.

Fire at the plant of the Barkwill Brick Co., Cleveland, Ohio, did damage amounting to $30,000.

Carl Von Gimborn, chief engineer of the Emmericher Machine Factory of Emmerich A. Rhein, Germany, was a Chicago visitor earlier in the month. He is on a tour of the United States, visiting representative clay products plants, having already spent nearly a year on the Pacific coast and in the far West. After a few weeks in and around Chicago he went to Ohio, where he will put in the remainder of October. Von Gimborn is greatly impressed with the advancement of the industry in this country and says his visit has been a most profitable one.

NEW PLANTS AND ADDITIONS.

It is understood that a proposition has been made to the Commercial Club of Windsor, Mo., to secure its assistance in the location of a brick plant there. A plant in the Kansas gas belt which has been obliged to suspend operation because of the failure of gas, will, it is said, be moved to Windsor.

A movement is on foot to establish a brick plant at Davidson, Alta., where it is said there are clay deposits which are suitable for making a fine quality of face brick.

Messrs. Pugsley have purchased property at Colbrook, N. B., and propose to establish a brick yard there.

The Norfolk Brick and Tile Co. is a new West Virginia corporation. $170,000 capital. Thomas W. Shelton, Norfolk, Va., is statutory agent.

The Clay Product Co., of Brazil, Ind., and Chicago, Ill., is planning to rebuild its plant at Brazil, which was destroyed by fire Sept. 1. Loss, $100,000, covered by insurance.

The Dunkirk Brick & Tile Co., Dunkirk, N. Y., contemplates putting in machinery for the making of drain tile on a large scale.

John Douglas, 1815 Rush Ave., Birmingham, Ala., writes us he is going to build a small plant soon.

The Superior Brick Co. has been organized with a capital of $300,000 to manufacture brick and tile at Fort William, Can.

The Guelph Brick & Tile Co., Ltd., is a recent incorporation with headquarters at Guelph, Can. Capital, $50,000.

The Albert Lea (Minn.) brick and tile plant is shut down and, it is said, will not again be operated until additional capital is provided with which to remodel and improve it so that it can be run to advantage.

The plant of the Elgin-Butler Brick Co., South Austin, Tex., was almost entirely destroyed by fire Sept. 27th. Aside from the destruction of its expensive machinery, a large quantity of crude oil in storage tanks and a number of tenement houses were destroyed. The loss is estimated at nearly $50,000. The plant will probably be rebuilt.

A brick plant will be erected by the Birmingham Ore & Mining Co., Birmingham, Ala., for the purpose of utilizing the by products of the ore for the manufacture of sand-lime brick. It is understood the plant will have a capacity of 100,000 brick a day and that the German process will be used.

The Albany Clay Products Co., a new million-dollar concern at Albany, N. Y., has secured an option on a tract of land and expects within a few months to establish a plant there for the manufacture of hollow fireproofing. Theo. L. Pomeroy, of New York, is president of the company and other interested parties are: Jas. H. Perkins, president of the National Commercial Bank, Albany, N. Y., Francis Swift, L. Howland and Arthur Rice of Boston.

The Paris Brick & Clay Products Co. has been organized with a capital stock of $100,000 to establish a brick plant at Paris, Can. Those interested are: J. W. Elliott, Hamilton; David Hare, A. S. Towers and Robt. Hamilton of Brantford and W. J. Wilson of Paris.

Lyall Bros., contractors of Montreal, are testing clays found near Cooksville, County Constable, Canada, and it is their intention to establish a plant there.

THE PACIFIC COAST.

San Francisco, October 12.—The greatest activity in the clay products industry on the Coast continues to be in sewer pipe manufacturing, though the output of terra cotta products and face brick shows no falling off. The rapid development of the suburban districts of San Francisco and Oakland makes an immense amount of public sanitary work necessary and hence a big demand for vitrified sewer pipe. The sewer pipe manufacturers hereabouts are all running full capacity and having no difficulty in marketing their products. The class of pipe being made is up to the standard, and while prices are as yet no better than usual, there is said to be some slight tendency toward stronger prices. The unseemly haste of certain newer concerns to dispose of their products at once is given as one of the reasons for the low figures on vitrified pipe, though of course competition in pipe of other materials has also its effect.

Terra cotta manufacturers complain of too keen competition, but are gratified at the way the demand for architectural terra cotta of all kinds is increasing on the Coast. The progress made both in extending sales and improving the products is very great here. The favor with which builders regard the artistic appearance of terra cotta work is constantly growing. The demand for enameled products is likewise on the increase. Fancy brick and pressed brick of various kinds are now being used more and more where common brick were formerly good enough.

The common brick situation shows no change over that of a month ago, in the matter of price, the figure of $7.50 per M still being quoted. The market for common brick, however, is somewhat duller, and certain large manufacturers have begun to curtail their output. Numerous plans are being made by brickmakers to improve their plants during the winter. The idea is not so much to increase the capacity as to reduce the cost of manufacture and build up general efficiency. With no great prospect of higher prices for clay products, in view of the strenuous competition of the cement interests, it behooves manufacturers to take advantage of every advanced economic method of production.

Building activity on the Coast is still great in spite of the approaching winter, and the general feeling in business circles is optimistic. Crops have been very successful in most quarters and the promise is for an unusually good building season next year. Naturally the building permit valuations have begun to fall off a little, yet the reports for August show a formidable array of figures and prove the contention that better times have actually arrived. In August, building permits to the amount of $1,950,502 were issued in San Francisco. This is a falling off of about half a million from the preceding month, and is a little less than for August a year ago. Oakland issued permits in August to the amount of $600,000, or about $400,000 less than for July, but almost $100,000 more than for August a year ago. Sacramento also shows a decrease, but Los Angeles issued permits in August of this year to the amount of $3,212,007, or about double the amount for the same month, a year ago. A falling off of about a quarter of a million is shown from July of this year. The August permits for San Diego total $752,861, almost double the amount for August, 1911, but a slight decrease from July, 1912. Portland issued permits in August to a valuation of $1,227,573 as against $1,494,921 in July, and a somewhat larger figure in August, 1911. Seattle's August record is $563,535, as against $645,325 in July, and over a million in August, 1911.

The Public Welfare Exposition, a state exposition of pure food, municipal, electrical and building exhibits, is being held this week at the University of California in Berkeley, and among the most effective exhibits are those of clay products. Gladding, McBean & Co., N. Clark & Sons, and the Steiger Terra Cotta & Pottery Works, each have characteristic displays of their products. Aside from the various exhibits, lectures and moving picture demonstrations are given for the benefit of the visitors.

N. Clark & Sons are at present supplying the terra cotta for the ten-story Marsh-Strong building in Los Angeles.

The extensive improvements under way at the plant of the California Pottery Co., Inc., at Oakland, are nearing completion and the company is getting ready to operate on partition tile in addition to its regular lines of sewer pipe, chimney pipe and terra cotta products. A new building of three stories, 50 by 100 feet is being completed, to be used for pipe drying. Also a nine-foot dry pan has been installed and some large new clay bins built outside. About sixty men are constantly employed at the Oakland plant, and others are employed at the storage yards at Twelfth and Mission streets, in San Francisco, and at the general offices at 836 Phelan building. Next winter, two more kilns will be put in at the Oakland plant and eventually the company will operate a ten-kiln factory. The management states that the company has never been able to supply the demand for its products since the reorganization about two years ago.

C. Hidecker, president of the Ione Fire Brick Co., is at present at Forest City, Cal., on a business and pleasure trip.

The United Materials Co. has been awarded the contract to supply about 800,000 white ivory enamel pressed brick for the new dining room and kitchen of the San Quentin prison. These brick are being turned out by the Los Angeles Pressed Brick Co.

The Port Costa Brick Co. is to install soft mud machinery in its plant next winter and thus increase the capacity of the plant, which is still operating full force.

The Steiger Terra Cotta & Pottery Works has orders for supplying vitrified sewer pipe for ten miles of sewer improvements in the Elmhurst district of Oakland, the construction work on which is being done by the Ransome-Crummey Co.

Manager C. E. Pratt, of the Golden Gate Brick Co. entertained the San Francisco Architectural Club at a bull's head dinner at Antioch, Cal. where the company's plant is situated, on Sunday, Sept. 22nd. This dinner and outing has come to be an annual affair.

Gladding, McBean & Co., have been awarded the contract for the brick and terra cotta work on the new 13-story steel frame loft building on West Seventh St. near Grand Ave., Los Angeles. Amount of contract, $75,000.

The Los Angeles Pressed Brick Co. has taken over the property of the Lore Mining Co. near Silver Lake Station on the Tonopah & Tidewater Railroad and are putting in a plant for shipping clay to Los Angeles.

The value of the brick, tile, terra cotta, pottery and various other clay products made in California in 1911, was $4,915,866. This is an increase of $73,475 over the figures for 1910.

According to the report of the Santa Fe agent the clay shipments from Elsinore, Cal., for August, 1912, were almost double those of August, 1911; 230 cars having been shipped this year, against 131 in August, 1911.

PACIFIC NORTHWEST.

Portland, Oregon, October 11.—Of all the Pacific Coast cities, and especially the ones in the Northwest, Portland is, perhaps, enjoying the most prosperous times. There is nothing to indicate a "boom," such as other Pacific Coast cities have experienced much to their sorrow, but indications point to a strong and steady activity during the fall and winter months. Some substantial real estate transactions have been consummated within the last two weeks and there is a marked improvement in sales of residence properties and small farm tracts.

Within the center fire limits, which is, properly speaking, the business section of the city, there are now under construction first class buildings which will cost, when completed, over three millions of dollars. Two of these buildings, the west wing of the Court House and the new Oregon Hotel represent a total outlay of $1,400,000. The new library building which will cover the entire block, at Eleventh and Yamhill, will cost over half a million of dollars. The construction of this building has just started. The new Empress Theatre will represent an investment of from $250,000 to $300,000. There are several other large buildings going up and, from advance information, more than one million dollars' worth of new construction will be started the coming month in the business section, this being confined to stores and office buildings only.

It is almost impossible to secure a sufficient amount of labor in the Northwest and this is considered an evidence of prosperity. In many places, the wage scale is the highest it has been for many years.

An interesting chapter in the brickmaking history of Portland was brought to light when an old brick building was recently torn down to make way for a modern office building. The laborers found many brick which bore the date of 1877 and the initials "E. J. J." These initials stand for E. J. Jeffries, the first clayworker to operate a brickyard near Portland. This yard was started in about 1875 and was located on Barnes Road, well up on the hill. This shows that brickmaking in Oregon is a much older industry than most people imagine. These brick were in a good state of preservation and demonstrated the lasting qualities of brick.

The Standard Brick & Tile Co. is now producing a great deal of fireproofing. It recently secured the contract for the Failing School, the Wauna Apartments, the Portland Gas & Light Co.'s building, and others. J. G. Hammer, president of the company, has decided to make Portland his permanent home and has recently moved his family from his former home in Butte, Montana. He has purchased a beautiful home on the East Side. It is Colonial in style and is considered one of the finest homes on the East Side, in the Irvington district.

The Western Clay Co. has secured the contract for all sewer pipe to be used in the East Moreland District, which consists of over 40,000 feet. It has also secured the contract to furnish over 150,000 paving brick to the street car company. The latter will be supplied from the Renton (Wash.) plant of the Western Company.

The value of bevel-edged paving brick has been acknowledged by the city of Portland and its city engineer, Thos. M. Hulburt, has ordered all such brick used on streets having a grade of more than 5 per cent. The first streets to be affected by this order are Wayne and St. Clair.

The large sewer pipe plant of the Standard Clay Co., at Sopenah, Wash., was completely destroyed by fire on

September 29th. The fire started near the engine room and spread rapidly over the four-story building and in less than thirty minutes the entire plant was on fire. The company, pending the insurance adjustment, has as yet not decided whether or not to rebuild. However, indications are that it will erect a new modern plant larger and better than the burned one. The plant is owned by Tacoma and San Francisco capitalists. W. S. Dimmock is general manager of the company and has headquarters in Tacoma, Wash.

The Pacific Face Brick Co., of Portland, is supplying the brick for the new Shasta Building and for the new First National Bank building at Albany, Oregon.

The Abrahamson Brick Co., of Seattle, Wash., is still busy filling a large contract for brick to be used in building the state buildings at Olympia, Wash.

The Loshe Brick Co., of Seattle, is shipping most of its brick to Vancouver, B. C., and reports a good business this year.

The brick business in and around Seattle is very quiet and low prices reign. Indications however point to better business and prices in that locality the coming year.

The Far West Clay Co., of Tacoma, sold the necessary material, recently, to build dry kilns for the Drayton Bay Shingle Co., at Bland; for the Eatonville Lumber Co. at Eatonville, the M. R. Smith Shingle Co. at Mineral, and the Atlas Lumber & Shingle Co., at McMurray, Wash. The same company is also supplying material for the new Vashon Bank building, and for the Duball State Bank building, Duball, Wash.

The Denny-Renton Clay & Coal Co. had erected in the windows of Augustine & Kyer, at Seattle, a bake oven, the material for which was manufactured by the Renton Company. The exhibit was seven feet in length and six and one-half feet high. It showed a modern bake oven, the inside lined with fire brick and the outside with pressed brick. It was equipped with the usual fire grates and other appurtenances. To add an air of use to the exhibit, loaves of bread were shown both within and without.

The Western Clay Co., Portland, is furnishing Hurley-Mason Company with 60,000 No. 7 builders' brick for the building which they are erecting at the corner of Fifteenth and Hoyt streets, Portland; the Portland Gas & Electric Co., 50,000 brick of the same kind for its building at Front and Flanders, and has been receiving heavy orders from the Oregon Electric & Southern Pacific for shipment into the Willamette valley towns and cities for paving purposes. Vitrified paving brick of its manufacture are being used on upper Washington street, Westover terrace and Adams street, Portland. The company reports business good in its line.

THE MIDDLE NORTHWEST.

Minneapolis, Minn., Oct. 11.—The past season has not been a very satisfactory one to the clay industry of the Northwest, as a whole. Some yards have had a good season, but they were in the minority. The backward business was confined largely to the first half of the year, when the crop outcome was yet in doubt. The latter half has been much better. The crop conditions and prospects were so assuring that considerable business was done in anticipation of the fall crops. The fall promises well, while the succeeding season should be unusually active. This fall, there will be a great deal of incidental business, in the way of improvements, extensions, repairs, foundations, well curbs, cisterns, and all the numerous other farm repairs in which clay wares may be used.

The reports, from the country sections, indicate that clay wares will be used to a much greater extent than formerly. It is noted that good results are being secured from the extensive advertising of clay wares which is being carried on. There seems to be more of an inclination to build of brick than has been the case in the past. This is also noted in the city as well. If it were not for the excessive wage scales which bricklayers demand, there is no doubt that brick would be used to a much greater extent than is now the case. But it is a common thing for intending builders to be told when asking about brick, that the labor cost would make it out of the question. Brick would be used in numberless ways, such as for trimming, sidewalks, retaining walls around residences, foundation work, etc., if it were not for the cost of laying.

At the recent Minnesota state fair, there were a number of exhibits by clay concerns, displaying drain tile, silo block and the like. The interest shown in the different clay products displayed means much for the future demand. The excessive wet weather which has ruled for some time, means a revival of interest in farm drainage that will make a lively fall demand. Clay tile has had a hard fight with cement tile, but the indications are that the supremacy of the clay product is being recognized very generally. The cement showings of drain tile at the state fair were not strong. It will be noticed that the displays in cement vary materially from year to year, indicating the following of new hobbies and dropping of the old. While cement silos were exploited to some extent, they were not pushed at all. The wood stave silo and the clay silo in the radial and angle block received the most attention. And as every farmer who ever had a wood silo, knows of its disadvantages, the comparison was anything but objectionable to the clay silo people.

Edmund G. Walton, a prominent Minneapolis real estate dealer, is having a cottage erected in Walton Park, of clay tile and steel construction, the Denison tile from Mason City, Iowa, being used. This style of construction is to be used by this firm in the erection of a number of cottages. They first attracted a great deal of attention, as it was an innovation here, in the construction of residences. The Denison load-bearing tile has been tested in the Minneapolis building department, and withstood a load of 140,000 pounds per foot of bearing surface. The Minneapolis ordinance was recently amended, after this test, to allow of the use of this tile in residence construction.

The week of Oct. 28 to Nov. 2, inclusive, is to be devoted to a comprehensive display in Minneapolis, of wares made in the city. In building material lines, there will be quite a display. In clay wares, there are the products of a number of common brick plants, one or two sand-lime brick plants, and the Coon Creek brick plant available. The intention is to have the Clays in the show windows of the downtown stores, department and other stores, and there is to be as wide and general a showing of home-made goods as possible. Displays of bulky machinery, will be placed in the streets.

The vocational schools of St. Paul and Minneapolis are opening for the fall. Neither city offers any course in bricklaying, although this is a field which is more desperately in need of young men with training than many others. Lack of room is given as a partial reason. In Minneapolis, the Board of Education stands ready to institute any course, which twenty or more are ready to take up. It is not known whether that number of intending students in brick-laying is available. The union restrictions would probably work to discourage any classes here, as it has done elsewhere.

The Board of Charities and Corrections, in St. Paul, asks an appropriation to provide for establishing a pottery plant at the city workhouse, to employ prisoners in making flower pots. It is proposed to include cement and sand work with this. The request will encounter objections if it seems to be inclined to go beyond the initial stage. There will be vigorous complaint if it should go to the lengths that it has in the Minneapolis workhouse, where a quantity of common brick is produced, for which a market must be found. And in finding it, the local field has been disrupted by the prices at which the goods were sold. They established a low price which served as a precedent on which to base other demands for cut prices, and worked as a general demoralizing influence on prices.

One of the exhibits at the Minnesota State Fair was that of the State Highway Commission, showing various forms of country roads. The culmination of road improvement for the country was shown in a highway of brick with gravel shoulders which commanded a great deal of close attention.

J. A. Edwards has opened an office in Minneapolis, as representative of the J. B. Owens Floor & Wall Tile Co., of Zanesville, Ohio. He will handle all kinds of tile, including floor, wall, mantel, enamel, faience and art tiles.

The work of the Minnesota State Geological Survey at different points in Minnesota, has been including investigation of the clay resources and their possibilities. At different points in the state, the clays have been investigated and analyzed, to determine the uses for which they were most suitable. The department has also invited the submission of samples from the clayworkers of the state and has indicated a willingness to work with the industry in every possible way.

The Fairmont Drain Tile & Brick Co., of Fairmont, Minn., has finally placed its plant in operation. This company has been experimenting with clays from Blue Earth, Minn., and from Mason City, Iowa, but has found the former to be more serviceable for its purposes.

A test was threatened of the ordinance fixing building restrictions upon University Avenue Southeast, in Minneapolis. An action was started against the building inspector, asking a writ of mandamus to compel the issuance of a building permit for a business building, where the ordinance excluded such buildings. The court denied the writ, holding that the petitioner had not made a sufficient showing to justify granting it, and the move was dropped.

The State Labor Department of Minnesota has recently issued a digest of various accident compensation laws in force in different states. Minnesota is almost sure to have some such law passed at the coming session, which will naturally bear upon all employers using machinery, including of course, brickmakers. It will not be limited to users of machinery, though they are the ones who will receive the most trouble from it, in all probability. At least two drafts will be submitted to the legislature—one by the labor element and one or more beside. The state bar association is completing a report along this line.

ST. LOUIS, MO.

St. Louis, Mo., October 10.—A decrease of $242,232 or about 19 per cent from the record of September, 1911, in building operations in St. Louis, was shown by September, 1912. The total work authorized in September, 1911, was $1,490,995. That in September, 1912, was $1,248,763. The number of permits issued was forty-two less than for the corresponding month in 1911. The operations for the first nine months of the year are clearly ahead of the first nine months of last year.

The Hydraulic Press Brick Co., has purchased the old Union Jockey Club racetrack, at the northeast corner of Natural Bridge Road and Union Avenue, for $240,000. The tract comprises 100 acres, the soil of which is available for the manufacture of brick, for which it is understood it is to be used.

A building permit for the erection of a one-story warehouse for the storage of ice was issued. The cost of the building will be about $30,000. The structure will be of brick and steel, and the walls will be about 3½ feet thick.

A fire on Thursday, October 3rd did considerable damage to the works of the American Press Brick Co., located in St. Louis County.

The brick and terra cotta work on the Railway Exchange building is under way. This building will consume about 5,000,000 common and about 400,000 enameled brick.

More public improvement work is being done in St. Louis now than ever has been undertaken at any one time in the city's history. Approximately $10,000,000 is being expended and 150 miles of streets are being dug up to make necessary changes and betterments.

The Street Department has done and is doing probably the greatest amount of work. This work authorized at various times by the last two Municipal assemblies extends over the entire city. The present administration has been marked by the construction of scores of new streets and the reconstruction of many old ones.

The city is now working on $3,000,000 worth of sewer construction which, when completed, will place St. Louis on a footing with any other city in the world as regards sewer facilities.

The Missouri State Capital Commission has selected Evarts Tracy and Egerston Swartout of New York as architects of the new State Capitol.

The design submitted by this firm won easily in the competition.

The building as designed by Tracy and Swartout is estimated to cost, without the interior decorations, $2,230,127. The old Capitol burned in February, 1911. The new Capitol must be constructed from Missouri material, all other things equal.

KENTUCKY.

Louisville, Ky., October 10.—The interesting feature of the clay products trade in Louisville and Kentucky now is that business is just as good as though it were the middle of summer, with the sun burning down and making the brick-layers work like smoke to set more than 2,000 per day to the man. The ring of the trowel upon "Number One face," and the croon of the negro hod-carrier resound everywhere.

There is lots of building afoot in the Bluegrass region, and it is being handled just as rapidly as day-light will permit. One of the vain regrets of the trade is that there are only twenty-four hours to the day and that comparatively few of these, from the standpoint of the zealous brick manufacturer, admit of strenuous labor in the clay pit and in deliveries. The weather is fine, new contracts are developing every day and labor conditions are beyond criticism.

The entire craft is praying that cold weather of the sort which makes the men on the job seek refuge from the blasts of Boreas will hold off for six weeks or two months. It is not to be expected that active building may be pursued to its fullest extent during December and January, but there is just a chance that milder temperatures than usual will prevail, and the brick men trust that, since the powers that be have presented a banner building year to the Gateway City, the same providential influence will make the winter of 1912-13 short.

At least two big buildings in course of construction remain with their brick supplies uncontracted for, and another mammoth structure, which will be the tallest in the South, is in prospect. There are the Starks and Republic office buildings, the one at Fourth avenue and Walnut street and the other at Fifth avenue and Walnut, with the steel-work not even story high. The brick work upon these jobs is a matter of the future, although the general contract has been let for the Starks structure to the Selden-Breck Construction Company, and the H. H. Snyder Company has the contract for the reinforced concrete frame of the "Republic." Just what company will furnish the brick for either structure is yet to be determined—and each building is of sufficient importance and size to make the average manufacturer's mouth water in anticipation.

There is much residence building under way here. In the extreme eastern suburbs several handsome homes are being built, costing from $50,000 to $100,000 each. Big Louisville business men are proving to be expert investors in the home, and it is noticeable that the handsomer dwellings incline toward the modernized Colonial brick type of architecture, which has been recognized since time immemorial by novelists, play-wrights and moving picture scenario writers as typical of the Sunny South.

The paving brick situation alone is strained. The municipal authorities contend that the paving contractors are demanding exorbitant prices for work let by the city and declare that they will not award any new work until the demands of the men who do the business are scaled down. It is alleged that the over-zealous demands of contractors during the past couple of years have made the paving, here, cost much more than in other cities of similar size in the Middle West. The Board of Public Works has asserted that it believes that the city can do without new streets as long as the contractors can do without new contracts. Until the trade capitulates, the Board further avers, the city will do its own repair work, this being the only branch of street maintenance which will receive attention. The rupture which has been caused is not affecting the manufacturers of vitrified brick here to any appreciable extent, inasmuch as most of the material used by the contractors during the past year or so has been purchased in Ohio, Indiana and Illinois. In one respect, it seems, the attitude of the city promises to make business better with the local contingent, for if bids are to be scaled down Louisville manufacturers are confident that their product will be adopted as a measure of protection, while "foreign" materials were formerly used. In any event, the breach between the contractors and the authorities should be healed in short order, because of the demand for street extension and the fact that the men who specialize in this business are not likely to liquidate.

That you cannot keep a good company down any more than you can submerge a good man is being proved by the Hydraulic Brick Co., of this city, a pioneer concern which has long figured as the most extensive concern in the local trade as well as being one of the biggest in the state. When the company's stockholders voted to disband and gradually dispose of its properties, quitting the business July 1, 1912, many surmises were made as to the probable future of the interests which have for years maintained a prominent position in the building field here. It has subsequently developed that the company is being reorganized under new management. In view of this action, it is reasonable to assume that active operations at the two yards which remain under its ownership will be resumed in the near future. Antoine Dumesnil, who resigned as president and general manager of the company, has been succeeded by A. J. Jungerman, of the Seelbach Hotel Co., who was secretary of the company, several years ago. Donald McDonald, a well-known Louisville business man, president of the Kentucky Heating Co., has been re-elected vice-president. Walter S. Adams, president of Walter S. Adams & Co., and prominent in local real estate circles, has been re-elected secretary. Mr. Jungerman in addition to his office as president, performs the duties of treasurer of the company.

"No definite statement may be made as to when the operations of the Hydraulic Brick Co. may be resumed," said Mr. Jungerman to "Brick and Clay Record." "We have not yet perfected plans along this line." John A. Wilson, formerly manager of the Southern yard of the company, at Lochland, Ky., eight miles south of the city, on the Knoxville division of the Illinois Central Railroad, has become superintendent of both the Hydraulic yards, the Southern and the Central, the latter at Twelfth street and St. Louis avenue. The combined capacities of these two properties are from 75,000 to 100,000 brick per day.

Antoine Dumesnil, formerly president of the Hydraulic Brick Co., but now retired from active connection with the brick trade, has taken offices in the Coleman Building, at Third avenue and Jefferson street, where he will transact his personal business hereafter. Mr. Dumesnil recently purchased a handsome Rambler touring-car. He has been an ardent automobilist for years.

"Business was never better," said Owen Tyler, a prominent Louisville business man who is the Kentucky representative of the Hydraulic Press Brick Co., of St. Louis, Mo., and several other well-known brick concerns. Mr. Tyler is rushing deliveries from the Hydraulic Press Brick Co.'s plant at Brazil, Ind., to the new $1,000,000 City Hospital at Floyd and Chestnut streets. This contract amounts to several thousand dollars. The Church of Our Merciful Saviour in this city is also taking on a lot of the handsome buff face brick, from the plant of the Hydraulic Press Brick Co., of St. Louis, Mo., for the beautiful new Henning residence in Cherokee Park. Leo M. Parsons, formerly of Parsons & Brother, well-known local lumber merchants, has taken a position on the Tyler sales staff and has acquitted himself famously since his entry into the new field.

Owen Tyler will provide a big building job for the Louisville trade about the first of the year. The Tyler Hotel Co., of which Mr. Tyler is president, is planning to build a handsome addition to The Tyler, its up-to-date new hotel at Third and Jefferson streets. The addition will be twelve stories in height and the present 8-story hostelry will be extended four floors higher, to conform with the rest of the structure. The house is barely a year old, but has done extraordinarily good business, and its owners, headed by Mr. Tyler, propose to furnish the Gateway City with another impressive caravansery. The architect's plans for the work will be ready about the first of the year and the work will be rushed to completion in time for the busy spring season.

The Louisville Brick Co. is running its plant in the West End to the limit of its capacity and is rushing deliveries to a number of fine jobs. The biggest Louisville order is for 1,250,000 hard and face brick for the new distillery and warehouses of Bonnie Brothers in this city. The new public school on Twenty-fifth street, which is being erected by Contractor Jacob Meriwether, is demanding 100,000 brick from Joseph Nevin's plant. With fine weather ahead and a constantly-increasing amount of orders, Mr. Nevin cannot see a cloud upon the commercial horizon.

With a couple of big contracts in hand and a lot of smaller work, the Kentucky Vitrified Brick Co., of this city, is much busier than it was at this time last year, and is, in fact, in possession of more business than even the rosiest expectations of its officers anticipated. The yard at Ninth street and Magnolia avenue is working overtime on terra cotta. It has secured the contract for the interior terra cotta and fire-proofing to be furnished the Starks building, which is now in course of construction, a fifteen-story office building, the contract for which was awarded to the Selden-Breck Construction Co. This job alone will be sufficient to keep the terra cotta kilns of the Kentucky Company burning all winter, according to Superintendent Joseph Cicotte. Another contract in hand is that with the A. Bentley & Sons Co., for furnishing terra cotta for the new City Hospital. The Kentucky force is re-lining a number of kilns at the plant.

Oscar Hillenbrand, A. P. Hillenbrand, Jr., and Paris M. Crane are now in sole charge of the East End Brick Co., of Louisville, A. P. Hillenbrand, Sr., having withdrawn to found the Hillenbrand Brick Manufacturing Co., which is now going full blast. Mr. Crane is the man who bought out the old McCullough brick yards in the East End, subsequently forming the company which bears that name. Oscar Hillenbrand is president of the East End Company, with A. P. Hillenbrand, Jr., as vice-president and Mr. Crane secretary-treasurer.

The East End Co. has contracted for the sale of about three-quarters of a million brick ahead and is confident of an excellent season. The company has yet to deliver 150,000 brick to the new distillery and warehouses being erected in Crescent Hill by the Kentucky Distilleries & Warehouse Company. Sanford Vaughn & Son, well-known local contractors, have ordered 300,000 for the remodeling of the wholesale millinery establishment of David Baird & Son on Main street, this structure having been gutted by fire about a year ago. The new Boston Shoe Store on Fourth avenue near Green street which is being erected by the H. H. Snyder Co., demands 200,000 more East End Brick, and a final feather in the cap of business is added in the shape of a 100,000 order of face and hard for the handsome new Louis Seelbach residence in Cherokee Park. The Mocking Bird Valley residential district is proving to be a fertile field for the brick manufacturer, said Mr. Crane.

With a single order of 4,000,000 hard brick uncompleted, a new one for 200,000 in hand and plenty of tile business, the Southern Brick & Tile Co. feels that it has no room for complaint. The latest contract landed by the Southern interests calls for 200,000 brick for the new warehouse of the Independent Ice Co. at Twentieth and High streets, while the Southern yard is still delivering on its 4,000,000 contract with the builders of the new City Hospital. In making trips every few days out in the state, T. Bishop, president of the Southern Brick & Tile Co., has closed several fine tile contracts. One of these, recently closed with William Simmons, of Shepherdsville, Ky., calls for material valued at several thousand dollars.

The Hillenbrand Brick Manufacturing Co., of which Andrew P. Hillenbrand, Sr., is president, is running its Lion press to the capacity limit of 30,000 brick per day, and finds that business could not be improved upon. George Krupp recently became office manager for the Hillenbrand Brick Manufacturing Company.

The Modern Construction Co., of Louisville, has filed articles of incorporation for the purpose of engaging in the manufacture of tile and similar clay products. The company is capitalized at $10,000, with a maximum limit of debt of the same amount. F. S. West, F. C. Goodwin and Albert S. Owen are its incorporators.

Martin Berger, a retired brick manufacturer, who was a veteran in the Bluegrass trade, died at his home, 1119 South Fifteenth street, in this city a short time ago at the age of eighty years. He was a native of Germany, but was engaged in the brick trade in Louisville for years, retiring from active business in 1897. His widow and several children survive him.

After having been in failing health for several months, due to the infirmities of old age, James P. McCullom, well-known among Gateway City brick men, died at his home, 312 East Breckinridge street, a short time ago. Mr. McCollum was eighty-five years old. He was born in Ireland but came to this country when a boy. After living in Philadelphia for a while he came to Louisville and founded a brick yard which he conducted successfully for nearly half a century, becoming one of the best-known citizens of Louisville. Mr. McCollum is survived by two daughters and eight sons.

At the age of sixty-five years, Joseph Weber, a retired brick manufacturer, died at his residence, 641 East St. Catherine street in this city, a short time ago, after an illness caused by a complication of disease. Mr. Weber was born in Cincinnati, O., and married Miss Mary Gehring, of that city. He owned a brick yard in this city for years, retiring from business several years ago. He is survived by two sons, three daughters, twenty-five grandchildren and one great-grandchild.

A new brick plant has been opened in the mining town of McRoberts, Ky., a municipality built over night, comparatively speaking, by the energy of the Consolidation Coal Company, of Baltimore, Md., one of the biggest concerns in the black diamond field.

Simon Woehler, a retired brick manufacturer of Evansville, Ind., died at his home in that city a short time ago at the age of sixty years.

The South Paris China Pottery Co. is being organized at Paris, Tenn., to develop a tract of valuable clay land in Henry county near Paris. The shale in this section has commanded a wide market among Eastern potteries for years, hundreds of car-loads of it having been shipped. In organizing to work on the ground, a number of Eastern pottery manufacturers are putting themselves in a position to save freight rates.

The Modern Tiling & Manufacturing Company, of Knoxville, Tenn., capitalized at $100,000, has been organized and incorporated. The company will establish a big plant near Smithwood, a suburb of Knoxville. Its officers are: A. S. J. Davis, president and treasurer; A. G. Bigley, secretary and general manager; R. A. Mourn, general superintendent. The company will manufacture tiling, wainscoting and artificial stone.

CANADA.

Forty million brick will be the output of the Acme Brick Co., of Edmonton, Alta., for a season of nine months in 1913 when it completes the installation of new machinery in buildings to be erected six miles north east of Edmonton this fall and next winter. The present output of 75,000 brick a day will be increased to 200,000. The improvements will be made under the direction of W. B. Lawhead, engineer, who is now at Spokane, Wash., arranging for the establishment of a plant there.

The company has placed orders for more than $20,000 worth of machinery, and will expend about $60,000 between now and next spring. There will be six permanent kilns, using the Boss system of burning; a Justice radiated heat drier, a stiff-mud wire-cut Freese machine and a pulverizer.

Preparations are also being made to use a steam-shovel, with a daily capacity of 600 to 700 cu. yds. in the clay pit, where the deposit is 35 feet in depth. Cottages will be built for men with families and a bunkhouse for workmen.

The completed plant will be able to furnish enough brick for Edmonton for a number of years to come, but notwithstanding that fact, the management instructed Mr. Lawhead to place his layout with a view to further extensions. When the plant is placed in full operation, next May, it will require the services of 100 men continuously. The company already has orders booked for 5,000,000 brick for delivery next year.

C. E. Brown, who was in charge of the brick exhibit of Medicine Hat, Canada, at the Clay Products Show last March, is planning to establish a brick plant in a new city in Canada, which will hereafter be known as Pittsburg, Alta. He is desirous of securing a brick manufacturer to build and take charge of the plant and will furnish any capital necessary.

NEW YORK.

New York, Oct. 9.—Eastern manufacturers are preparing to close down their plants for the winter. Consequently, the dealers in this market are coming into the market for brick and are now actually stacking, although, at this writing, the Brooklyn dealers are considerably ahead of the Manhattan handlers.

It is conspicuously evident that somebody is going to be caught short, late this coming winter. It seems as though the recent advance in prices of twenty-five cents a thousand, making the top level $7.25 and the lower level $6.75, is interpreted generally as an artificial movement and therefore not one to be alarmed over. The fact that the new $7.25 level has been poorly maintained in the open market gave further substance, apparently, to the belief that the upward movement was merely an arbitrary one.

As a matter of fact, the recent advance was based upon actual conditions at the kilns, which, of course, no one, but the manufacturer himself could know about. Here is the cause in a nutshell:

For every ton of structural steel that goes into a building, about 300 common brick can be figured. Based upon a possible steel requirement in New York city and vicinity during the next three months at 1,000,000 tons, there will be a call for 300,000,000 common brick before January 1, 1913. If additional steel requirements come forward as expected between now and April first when the 1913 brick season opens, there will be a demand for 483,000,000 common brick in New York city and vicinity.

Only 900,000,000 Produced in Hudson Valley.

When it is considered that barely 900,000,000 brick were manufactured in the Hudson river valley this year, more than half of which has been sold in this market, and also that the Raritan river interests have been shipping about 25 per cent more brick than usual into this market, it is not to be wondered at that the producers, foreseeing a possible shortage over which they have had no control, have advanced the price for high grade material.

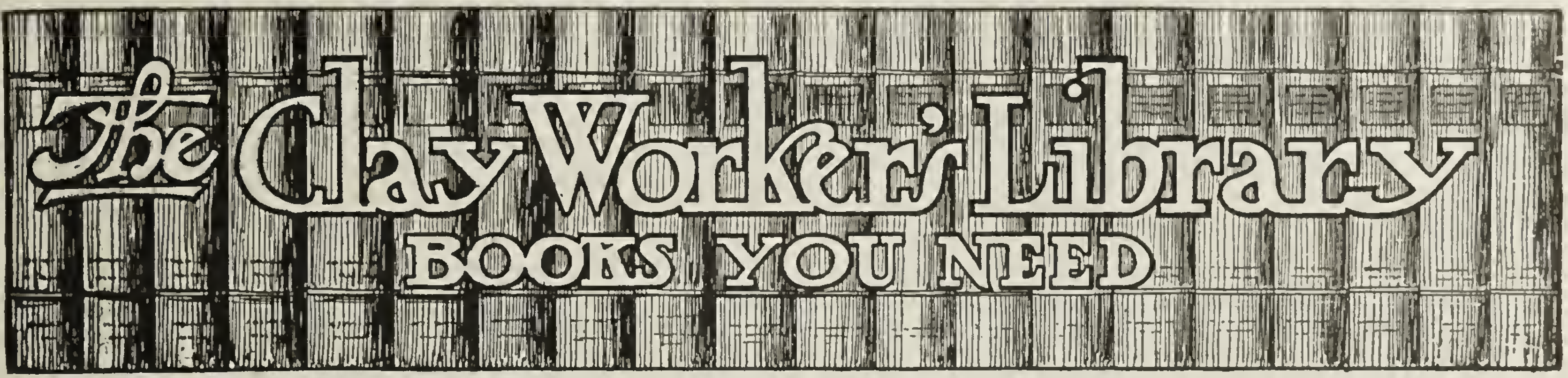
But, why should the present market be dull on the high level and active on the low? The reason is plain. There is little call for brick here now. Dealers are not willing to tie up with long engagements with manufacturers on probable jobs that may or may not materialize, if the expected decision of the inquiry into the status of the Greater New York Brick Co. should be decided adversely. In the mean time, the independent interests are standing pat and are taking care of what little demand at the new levels there is and spending every effort to stack all brick under their sheds that they possibly can.

As a further evidence of the effect of the weakness of the present common brick situation on the future, the following computations made by the writer from financial engagements, pending and made for 1913, as reported by Dodge reports show the trend:

The estimated total engagements already made for next year up to and including September are in excess of $187,000,000. This is for Manhattan, Bronx and Brooklyn only. Advices, from leading companies and individuals in Queens, brings the total up to practically $200,000,000, mostly for residential and some industrial developments; while the estimated total of engagements for building operations, during the next nine months, in East Jersey is $22,000,000, thus bringing the estimated financial engagements for completed building construction of all kinds, between now and February 1, 1914, up to $222,000,000.

This estimate shows an increase over the estimated total for new buildings in 1911 of $34,000,000 and even shows a gain, based upon the Building Superintendent's report for the nine months of 1912, of $20,000,000.

Both 1911 and 1912 opened with a liberal quantity of common brick in sheds and both years followed fairly good manufacturing seasons. This last season has been one in which labor has been extremely scarce. Therefore, 1913 will open with a terrific handicap in the mere matter of common brick supply and judging by financial engagements, pending or completed, with a big building season.



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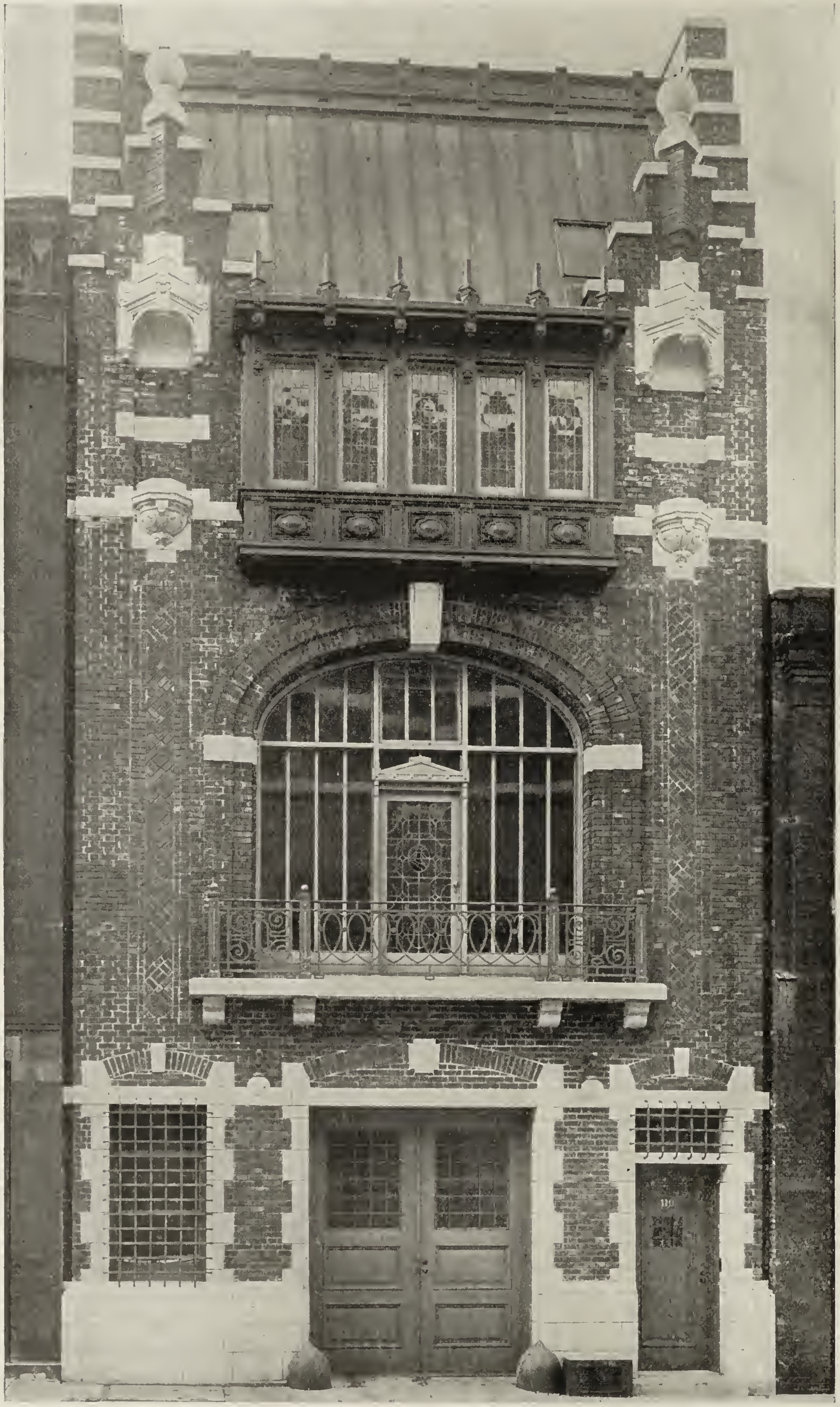


Courtesy "Brickbuilder"

The Ver Meer Studios, 111 E. 66th St., New York City.

BRICK and CLAY RECORD
Vol. XLI- No. 9
Nov 1, 1912

LUMBER MEN IN CENTRAL ASSOCIATION

New Body, National in Scope, Takes in All Branches, Including the Wood Paving Block Industry Which Is Organizing

If there is anything that will arouse the sleeping clay product manufacturers to the importance of "getting together," it is the startling announcement contained in the opening paragraphs of the following news item:

WITHIN the past few weeks the entire lumber industry of the country has been organized for association work. The central or parent organization includes every branch of the industry and takes in the various associations already formed.

As a part of this general organization movement, it is said that the wood block people are forming an association and intend, as soon as they are in working shape, to enter into the central organization just as the Northern Pine people and the Southern Cypress fellows and all the rest have done.

The details of the organization of the central association is in the hands of a Chicago advertising agency, which makes a specialty of handling this sort of work, and an official high up in this concern informed a representative of "Brick and Clay Record" that within a few weeks a publicity campaign would be launched that would make all other competitors sit up and take notice.

The plans of this parent organization, it is announced, will not interfere with the general association work of the various branch associations such as the cypress and pine lumber organizations, but on the other hand will strengthen their work. The general purpose of the national body is to boost everything made of wood.

Lumber Journal in the Fight.

Apropos of the movement to organize the wood block people, the "Lumber World Review" has taken up the cudgel and, following the campaign that was begun in "Brick and Clay Record" several weeks ago, has taken up the battle with a vigorousness that should cause the clay product people, particularly the vitrified paving brick manufacturers, to get busy.

The "Lumber World Review" says: "The project has not quite crystallized into an effort looking directly to an organization of all lumber bodies into a collateral institution for advancing the propaganda of wood paving of all the streets of all our cities."

The editorial, continuing, states: "There is no town of importance in the United States that does not contain some kind of a lumberman, and it would be safe to say that at least 85 per cent of the towns and cities of the United States contain lumbermen who are members of some lumber association.

"Did you ever stop to think, Mr. Reader, how many lumber organizations there are in this free and politics-ridden country of ours? Just at this particular moment there is not a human soul who knows even the exact number of names of all the lumber bodies. Some of us almost know, but none of us quite know the exact number of associations. All that will be worked out very soon and then a proposition will be made to these various bodies to help to carry on this work which the 'Lumber World Review' has in view.

"A committee should be appointed from the membership of each national or local organization of each city in the United States of over 1,000 inhabitants, whose business it should be to report to some common center the latest news of paving that may come to their attention.

"It is not the province of the 'Lumber World Review' to enter into the forming of this organization, but if no other agency takes hold and pushes the project this publication will do so. It would be the easiest thing to do that has ever been accomplished in the way of organization.

"If this proposed Information Bureau were in working order, but little more would be heard about the placing of brick in the streets of cities such as Houston, Tex., and Shreveport, La., Hattiesburg, Miss., and Puyallup and Pullman, Wash.

"Shreveport and Houston got caught with the lumbermen standing about in the shade gossiping, and it might be that Puyallup and Pullman, smaller towns it is true, but quite as important towns in their way, might follow suit.

"The plan is to have the members of the proposed National Wood Paving Block Association catch and transmit to some central body like the National Lumber Manufacturers' Association new paving projects, so that the lumbermen can become—or have a chance to become 'accessories before the fact,' to any paving movement that is going on.

"Right in line with this suggestion to form a National Wood Paving Block Association, and showing a concrete example of the kind of information that could be collected and disseminated through the information bureau of such an organization, the letter shown on this page, written by Hon. G. A. Bodenheim, mayor of Longview, Tex., is competent. He indorses strongly wood paving block and says he is very enthusiastic on the subject."

The letter follows:

July 26, 1912.

National Lumber & Creosoting Co.,
Texarkana, Ark.

Dear Sirs: I am in receipt of your favor of the 25th and will state that the wood block pavement put down by the

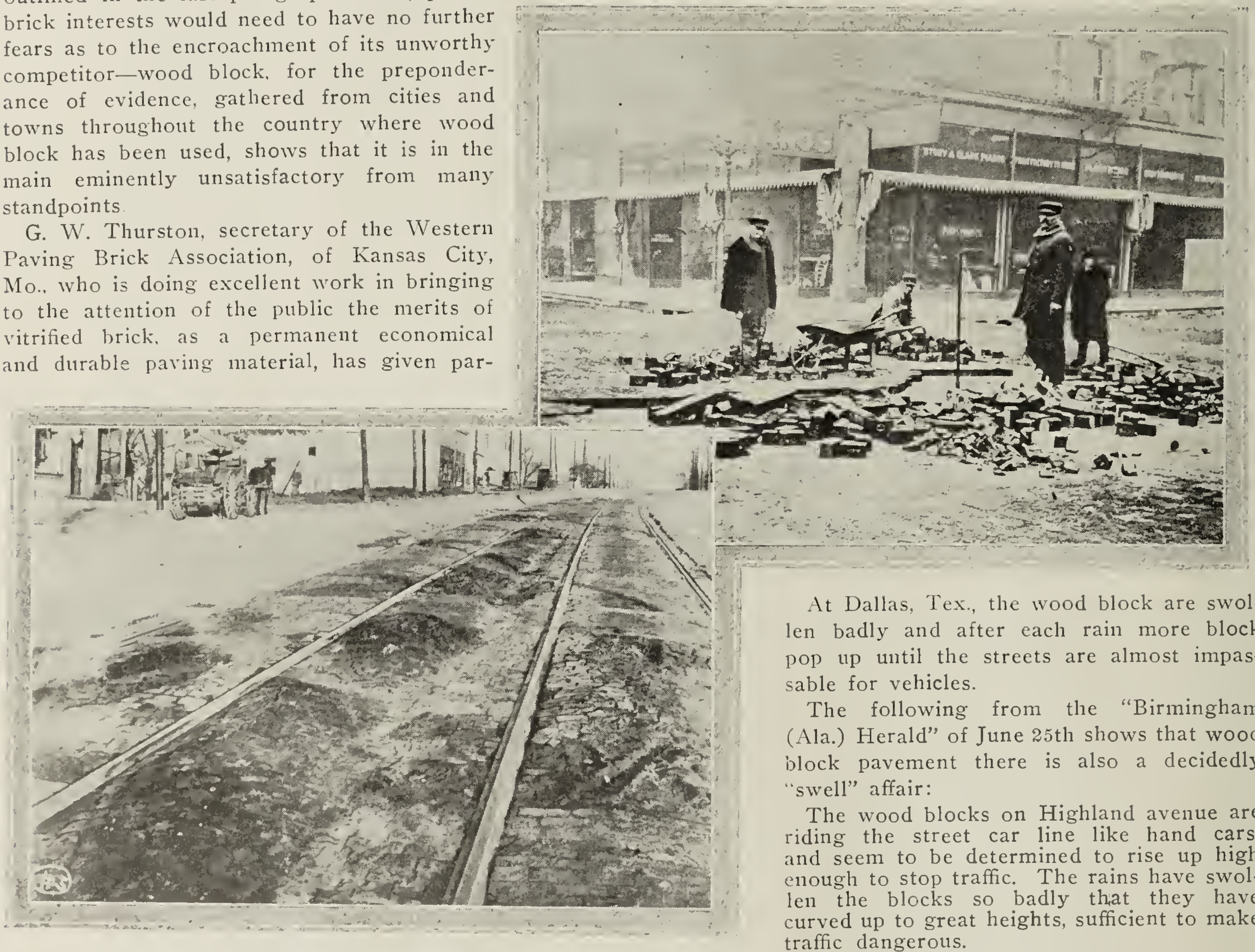
> City of Longview, has been giving most excellent satisfaction. The material furnished by your company was first-class in every particular, and I cannot too strongly recommend the use of this pavement in preference to all others, by towns and cities of this state. In fact we contemplate in the near future, putting down something over a mile of pavement and I do not propose to figure on anything else but creosoted pine blocks.
>
> At any time that I can be of service to you, don't hesitate to call on me as I am very enthusiastic on the question of using this pavement by all municipalities.
>
> G. A. BODENHEIM.

"The pavement, which was put down in Longview, Tex., last fall and for which the National Lumber & Creosoting Co., Texarkana, Ark., furnished the material, consisted of 16,000 yards.

"The facts of the experience of all cities in the United States, where wood paving block are used, could be gathered and used as an argument in towns where street paving is contemplated."

If the organization would faithfully follow the scheme outlined in the last paragraph above, paving brick interests would need to have no further fears as to the encroachment of its unworthy competitor—wood block, for the preponderance of evidence, gathered from cities and towns throughout the country where wood block has been used, shows that it is in the main eminently unsatisfactory from many standpoints.

G. W. Thurston, secretary of the Western Paving Brick Association, of Kansas City, Mo., who is doing excellent work in bringing to the attention of the public the merits of vitrified brick, as a permanent economical and durable paving material, has given particular atttention to securing information as to the relative values of other paving materials as compared with brick, and has sent us numerous newspaper clippings which give unmistakable evidence of the general sentiment against the use of wood block.



The upper view shows a familiar scene in Des Moines, Ia., repairing of buckled wood pavement. The lower picture, wood block pavement at East 15th street, Kansas City, Mo., impassable for vehicles.

The sticky tar which exudes during hot weather from creosote wood block pavement is a comomn source of complaint and Commissioner A. C. Kugel, of Omaha, Neb., moved by the pleas and threats of business men, decided to forever dispose of the tar on the wood block pavement on South 16th St. by using a surface heater to burn up the tar. This heater was brought into play as a last resort after a corps of men attempted to shovel the tar away. It stuck to the shovels and another corps was summoned to keep the shovels scraped off with wooden paddles. This had somewhat the same effect as an attempt to separate feathers and molasses, as the tar stuck to the wooden paddles also. The surface heater worked admirably and by this means the commissioner was able to get the street in shape so that pedestrians were able to walk across it without wading through a pool of tar.

The "Wichita (Tex.) Daily Times" states that the city council was petitioned to provide relief from the tar, which has proven a great detriment to business in the downtown districts. In Dallas, Tex., the wood block pavement was given a sprinkling of sand daily during the warm weather and while fairly effective, it proved to be rather an expensive process.

At Dallas, Tex., the wood block are swollen badly and after each rain more block pop up until the streets are almost impassable for vehicles.

The following from the "Birmingham (Ala.) Herald" of June 25th shows that wood block pavement there is also a decidedly "swell" affair:

> The wood blocks on Highland avenue are riding the street car line like hand cars, and seem to be determined to rise up high enough to stop traffic. The rains have swollen the blocks so badly that they have curved up to great heights, sufficient to make traffic dangerous.
>
> This is not the first time the new style pavement has arisen to show its "swell" appearance, in fact, for a servant, its antics have been entirely too joyful, and the Highland avenue people are thinking of dismissing it at the earliest possible moment.
>
> The New York Wood Preserving Co. is responsible for these blocks and is under bond to keep them in shape. The city engineer has taken up the matter with the company, and in the meanwhile Street Commissioner McCartin has the paving gang at work cutting down the swollen blocks and fitting them in.

Team drivers universally object to wood block pavement and as they are the ones who use the streets most, their opinion should bear weight. The following from the "Boston Globe" tells of the action of one union, and

(Continued on Page 346.)

PUTTING EFFICIENCY INTO SELLING END

Some Practical Suggestions for Developing Brick Sales in Localities That Are Applicable to All Selling Forces

In keeping with the recent announcements in the editorial columns of this journal, we are printing the first of the series of practical suggestions on the salesmanship of clay products. Mr. Beals, who makes the first contribution, is a writer of unusual ability, and has given considerable thought to the subject he treats.

By Allen E. Beals.

TWO boxes of apples stood side by side in a New York grocery store. One contained exceptionally large, perfect, glossy, red apples. There was not a speck or flaw to be seen on any of them, and they were carefully packed in a box of just the right size to fit the apples. In the other box were an indiscriminate lot of unassorted, speckled, worm-marked runts.
ment from the state of Washington, where apples are grown and shipped in the new way. The imperfect higglety-pigglety apples came twenty miles from a farm in New York state where they grow apples in the old slipshod way and ship them in boxes that are too small.

Efficiency consists, not in knowing at sight the fine apples, but in knowing and governing every condition from the selecting and planting of the seed to determining the size of the packing box and method of refrigerator shipment. In displaying them, the hodge-podge domestic apples act as a foil and it is not to be wondered at that the 4,000-mile apple brings a higher price than the 20-mile apple. Is it any wonder that the farmer 4,000 miles away is riding around in an automobile, while the farmer nearer to the market, with every advantage in the way of transportation, quick shipment and telephonic communication, is trying to pay off the burdensome mortgage on his farm and is wearing off his sunburned beak upon the grindstone of stand-pat-ism?

What is true of apples is also true of brick, whether that brick be front or common. You cannot blame the farmer near the door of his market for not trying to get the same price for his product as the farmer from Washington, but his goods fail to bring the price because of the lack of attractiveness at the selling end. The other fellow had the superior article and he paid his transcontinental freight rate, met his over-head charges and netted a healthy profit from the deal. The salesman who goes into the market with a poor brick, has no chance of competing against the fellow who is showing a first class brick. Why? Because it is a case of the apples all over again.

Enterprise Essential to Salesmanship.

The clay product manufacturer who puts modern machinery into his plant usually has foresight enough to properly display his wares, and ship his samples in such shape as to make the path of his salesmen comparatively easy. The manufacturer who continues to make brick the same way his grandfather did, starts his salesman out with a handicap because his brick is not up to modern standards and, because the salesmen is carrying an inferior article, he is naturally turned down by the architect, contractor or builder. If "nothing succeeds like success," the fellow who has a successful product to sell is bound to succeed.

He is a mere theorist who says that quality alone sells an article, whether it be an apple or a brick. Enterprise is as essential in a salesman as modern machinery is at the manufacturing end. If the grocer had put his Washington apples at one end of the store and his New York apples at the other, the contrast between the two would not have been so striking and the higher priced fruit would not have moved out so quickly. So with the brick. The good brick must be enough better to show at once its superiority over the bad one.

Suppose the good brick has reached the distributor, who usually is the retailer. How is his sales force to handle it to secure the greatest possible profit for him? He may use one of two methods: Call up the regular customers and try to sell them more brick, or cut into the trade of the other dealer who does not handle such high quality brick, either because of blindness to the present demands for progressiveness in business or through obstinacy born of the opinion that his father sold that same brick in the same way he is selling it, and made money. But it's Perkins to pickles he's not making the money his dad did, though he may not fully realize it at the time.

His time for realizing it is when his competitor gets this or that old customer away from him, not by price cutting but by being right there on the job, getting brick to his customer when he wants it, in exactly the quantity he wants and in the exact run of shade he promised.

Motor Truck Wins The Day.

When Deadun & Co. were asked to move a few extra loads of brick to the job after quitting time, when the bricklayers announced that they would go on a strike, two days hence, Deadun, Jr., said that his horses were all stabled and his men had gone home, but that he would get the brick on the job the next morning. The contractors, who wanted to work a night gang to clean up the job before the strike began, called up E. N. Terprize, the new-comer in the brick selling field in that town. Sure, he'd send the brick right away. He called up his motor truck driver, and while he was on the way back to the yard, he hired a couple of long-shoremen to begin loading the two five-ton trucks and the brick were on the job by seven-thirty, when the night gang came to work.

Who lost a customer and who gained one?

The efficiency dealer was on the job, not only with equipment to fill an emergency, but he had brick a little better than the other fellow had been supplying and the emergency brick actually put a tone to the finished building that pleased the owner.

Did the salesmanager make any noise about this little stroke? Let's take a peep at him in action. He first wrote out some snappy little advertisements, two columns by four inches deep, for all the local papers telling in a crisp way, how his firm met an emergency and had it appear in close proximity to the newspaper's regular news story about the threatened tie-up of all building operations in the city, when the strike actually took effect. Then he got a friend, who was a friend of a friend of the editor of a Sunday newspaper to feature a special on the modern way of handling building material. Of course, a human interest side had to be worked up so the live-wire salesmanager sat down and began to figure about how many brick were used in that particular city in a year, how many were used in a month, and then how many were used daily. Then he pictured how far all those brick would stretch if placed in a row and how far it would reach toward the moon and how long it would take the Twentieth-Century limited to travel the length of a track made of brick used in that city since the last building code was approved or since the first brick building was erected.

To add a little ginger to the article he worked up the story of how "Mike" his yard foreman rigged up a new loading system so that by piling brick into a metal bound cage, 750 at a time, a whole truck load could be hoisted to the top of a building at once, and then he figured that he could make a still further saving of time by making the body of the new automobile trucks, brick crates.

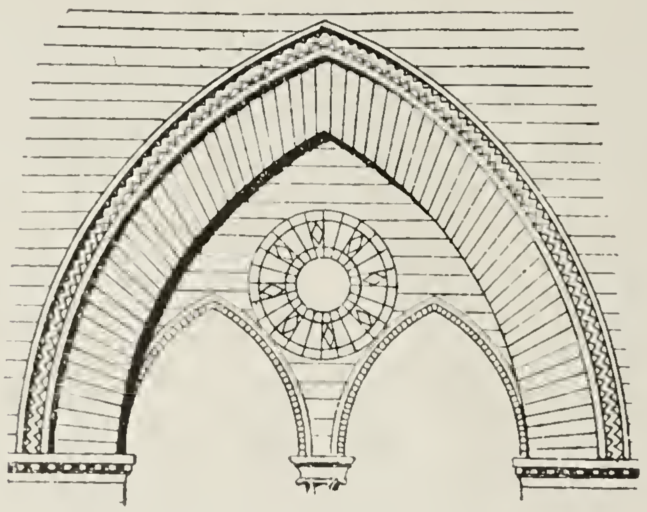
This article cost the salesmanager a ten spot for a dinner for all the retinue of friends and their newspaper friends who fixed up the avenues of approach to the newspaper, but the story when it appeared had colored illustrations of the fast New York-Chicago express train, dashing at 70 miles an hour toward the moon over a railroad track composed of brick with the inference pretty

(Continued on Page 352.)

USE OF BRICK IN ARCH CONSTRUCTION WORK

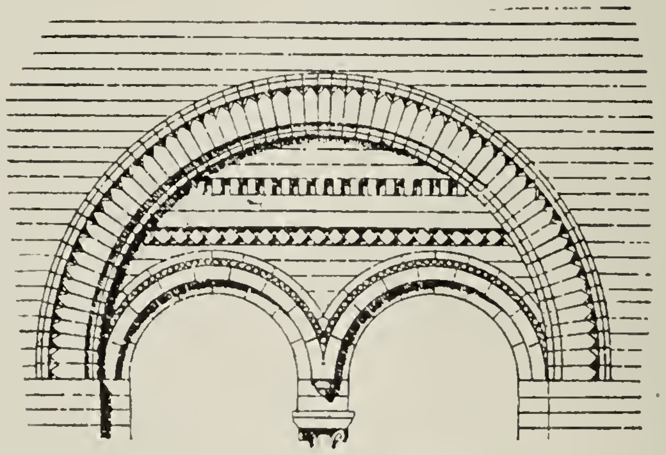
THERE are a number of ways in which brick arch rings may be constructed, according to a writer in the "National Builder," and the several methods are shown in Fig. A at (a), (b), (c) and (d). The writer further states:

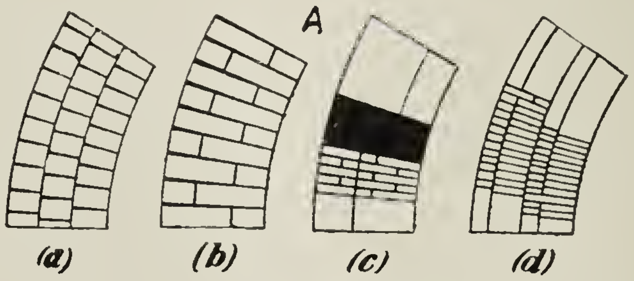
"The selection of the method to be used in the construction of such arches depends principally upon the span of the arch, and, consequently, the depth of the arch ring. At (a) is shown an efficient method for securing an arch ring in brick, which is known as the rowlock arch. As will be observed from the sketch, the arch is in a number of concentric rings, each composed of header brick. The advantage in an arch constructed in this manner is that good workmanship is easily secured, that special brick are not required, that the radial joints between the brick are broken and are reduced to a minimum thickness at the extrados end of each course, and that the horizontal joints of the sheeting of the arch are broken, and the brick are so arranged that a 4-inch toothing is always secured. The disadvantages of such an arch exist in the fact that its appearance is not all that could be desired, and that it is considered that there is a lack of unison in the action of the several rings, and consequently one ring of the arch is likely to carry more than its portion of the load. In good rowlock arches, however, laid up in Portland cement mortar, this last disadvantage is not reasonably taken.



Approved Type of Pointed Arch.

"At (b) the arch construction is known as the header and stretcher bond. This ring, as will be observed, is composed of radial joints which extend from the intrados to the extrados, the depth of the arch being made up with headers and stretchers. With such an arch wide joints are obtained at the extrados, and when the arch is of small span and considerable depth the spread joints become unsightly. The structural disadvantages of such joints exist in the fact that the mortar, especially when it has not obtained its final set, will compress more readily at the extrados of the arch than at the intrados, so that undue stress is created at the edges of the brick adjacent to the intrados of the arch. This construction provides a bond radially across the arch ring, as well as longitudinally or parallel with the direction of the soffit of the arch.





Forms of Brick Arch Construction.

"Another type of bonding for brick arch rings which has met with favor is that shown in the figure at (d). This type of construction has been used for arches of 30 feet and 40 feet spans, and consists essentially of concentric rings composed of headers and stretchers, with frequent interposition of a through stretcher course, in order to provide bonds between the rings."

AUTO TRUCKS IN THE BRICK BUSINESS

Cost and Other Data Given by Men Who Have Used Modern Transportation Methods in Actual Every-Day Work

One of the surest signs of the progressiveness of the clay product manufacturer is his interest in up-to-date methods. The motor truck, as a practical vehicle for efficient delivery, has made rapid strides in all commercial lines, and the clay product industry is no exception. This article by Mr. Scott shows how the motor truck has proven of real worth in Baltimore, Md.

By S. STUART SCOTT

WHILE the greatest problem of the age is that of transportation, the question of long and short hauls, plus the cost, predominating, the introduction of mechanical power in the field, formerly exclusively held by horses is bringing about the same change that the railroad train has over the caravans of "prairie schooners" that wended their way across the continent in the days of '49.

First came the steam traction engine, a clumsy, more or less unsatisfactory machine that was only adapted to certain classes of transportation in the country. The gasoline motor truck was the logical successor of the pleasure car and today, the gasoline truck bears the same resemblance to the pleasure car that the freight car does to the Pullman.

In all industries, in which heavy hauling is a feature, the motor truck is employed and in no line of business is this vehicle more appreciated than in the building supply and brick industry where the majority of the hauls are heavy and the distances are comparatively great.

Has Become a Permanent Factor.

There are few men in the building supply business who are better acquainted with what motor trucks will and will not do than Harry P. Boyd, secretary of the National Building Supply Company, of Baltimore. Mr., Boyd has made a careful and exhaustive study of the use of motor trucks, of which he owns three. When asked by the writer whether he was convinced that the motor truck had become a permanent factor in commercial work he replied:

"I can only reply to that question in a personal way, based upon my experience as applied to my particular line of business. I run three commercial trucks; two of them being the White 3-5 ton; one being a Packard 3-ton truck, but which is guaranteed to carry four tons. In my opinion there are two very important matters to be considered in order to make the commercial truck a paying proposition; one is "long hauls," the other "quick loading and unloading." Short hauls and long stops are expensive. I have had dump bodies attached to my trucks, and as an example of the advantage of these, would say that I can unload by the dump device a load of brick in good condition in from 3 1-2 to 4 minutes; with a stationary body, the brick being handled by hand, it would take at least thirty minutes. In loading, if the work of the truck is laid out in advance, there is no reason why the load could not be assembled and ready for the truck on its arrival at the warehouse.

"I make it a point to do this, and to put my entire force to loading the machine when it arrives. A load of brick is handled in this way in about ten minutes. I, therefore, calculate that in unloading and loading the trucks I save about forty-five minutes on each load. I have also figured that it costs close to $1.50 per hour to run the trucks. This is equal to 2½ cents per minute, which is a distinct saving of $1.12½, on each load, in loading and unloading, over the usual method.

Accurate Accounts of Work Kept.

"Now, as to the long hauls, I endeavor to reserve all loads of two miles or over for the trucks; short hauls I reserve for horse and wagon deliveries. Each driver of a truck is supplied with a sheet and is required to fill in the blank spaces, so that every morning I know the exact mileage, tonnage, time lost in loading and unloading, and time of the trip as mentioned on the sheet. This puts me in a position to keep a most accurate account of the work of each truck and to investigate in the event of any apparent loss of time.

"This also creates a certain amount of rivalry among the drivers, and has keyed them all up to get all out of their respective machines that is possible. There is another very important element to be considered and that is that any man owning a truck must have sufficient work to keep it going all the time. It might also be of interest to you to know how I figure the actual cost on same. This I do monthly, compiling the statement from the daily reports of each truck. The following is a late report on the Packard, which will act as an example.

Courtesy Greater Baltimore Committee.

35-h. p. White Truck Used by the Excelsior Brick Co., Baltimore, Md.

"Average miles per day, 42½. Total of 27 working days, 1,140 miles.

"Cost of gasoline, all repairs, also wages of chauffeur and helper, $157.04, averaging $5.84 per day; wear on tires, 6 cents per mile, averaging $2.53 per day; depreciation on valuation at $4,000, at 20 per cent, averaging $2.50 per day; insurance, liabilities, fire, etc., 75 cents per day; average expense for operating truck for 27 working days, $11.98; tonnage for 27 days, 650 tons.

"With the White trucks, on which the dump bodies are placed, the tonnage and mileage is much greater and the cost of upkeep is the same. I am in my third year, and so far, am thoroughly convinced of the advantages of trucks for commercial use, and should the expense of upkeep and wear and tear of tires not increase, I shall be very well satisfied. Another year, probably will place me in a better position to judge as to this."

The Excelsior Brick Co. of Baltimore has been using an automobile truck for about 14 months, but has only owned a machine about eight months, having a 35 horsepower White.. Although the firm has not kept a special account for the machine, Frank F. Knecht, the secretary, declared to the writer that there was no question about the machine being more economical than the three teams that were formerly used, saying:

"Perhaps the most important saving is on drivers, we now having one instead of three, which is a clear saving of $20 a week. Then we estimate that the three teams cost us $18 a week for feed. On the other hand, we do not know just what the gasoline and oil costs us, per week, but we do know that we are getting our orders out more quickly. Our deliveries are never behind as they were in the days when we depended upon teams and we are doing a larger business at that. We find, however, that we need another truck and we will place the second one in service this winter.

"Of course, we yet retain several teams for short hauls, as experience has taught us that it is only on long hauls that the motor car is really the most valuable. With the present price of gasoline and oil, short hauls are not as profitable, too much time being lost in loading and unloading. But even at that we believe in the motor truck and we expect to have more of them in the future."

* * *

CANAL LOWERS CLAY PRODUCT FREIGHT RATES

Among the first firms to make use of the newly opened canal waterway between Chicago and the Mississippi river are the producers of clay and brick and similar products. The Utica Brick and Clay Co., Utica, Ill., a portion of whose blue clay pit is shown in the picture, plans to ship to Chicago and way stations as soon as the necessary barges can be secured. It will convey the clay by its trams to a chute near Starved Rock. The chute has already been built. At its foot other trams will carry the clay to barges on the canal.

Interesting Clay Pit of the Utica (Ill.) Brick & Clay Co. The Company Will Take Advantage of the New Waterway in the Shipment of Clay.

An example of the most economical barges or flats to use for shipping clay or brick is shown by a survey of the government coal flats now in use on the Hennepin canal. One of these will carry as much as five cars.

The canal route naturally lends itself to shipment of clay and brick. The territory along the waterway is lined with brick plants and similar factories, among them being the works of the Chicago Retort & Fire Brick Co., of Ottawa, Ill.; the Ottawa Silica Sand Co., the Illinois Valley Sand Co. and many others more or less allied with the brick and clay industry.

"Soon Get Ahead of the Game."

Notwithstanding the extent to which steel and concrete are being used as building material, there is a good demand for bricks that makes the brickmaker keep at it and gives reason to believe that he will not soon get ahead of the game.—Bridgeport (Conn.) Standard.

VIEWS AN EXPLOSIVE FACTORY AT NIGHT

"Brick and Clay Record" Representative Has Novel Experience—Which Proves All Explosives Are Not So Very Dangerous

Ever visit a high explosive factory on a dark night when threatening clouds hinted at lightning flashes and made the blood chill in your veins? A representative of "Brick and Clay Record" did and tells about it here very graphically.

By IRWIN WALKER

THE night was as dark as a night can be. Threatening clouds hung low and gave a suspicion of an impending electric storm. The scene, as wild and weird as any fiction writer can paint, was set in a small basin scarcely half a mile across. A tangle of underbrush and second-growth trees covered the uneven ground and on all sides, there rose towering hills of solid sandstone.

Two shadowy figures stumbled over a winding road, the flash from a small electric battery lamp showing the way along the rough path.

"That building you see there," said one of the two, "is the main magazine. There are enough explosives stored there to make quite a 'blow up.'"

A shiver ran up and down the spinal cord of the other shadowy figure and a pair of eyes searched the inky blackness of the cloud-obscured skies.

"Is there any danger from lightning?" a voice faltered.

"Why, yes, if it hits any of that stuff just right, there might be," was the laconic answer.

There was a decided show of hesitancy on the part of the second party, but as his companion continued his stumbling pace and was fast broadening the distance between them, he drew a deep breath and casting one forlorn glance back at the entrance into the basin, he hurried on.

Up a hilly road and down into a narrow ravine their steps drew them. Suddenly there loomed into view another figure. The deceptive shadows gave it herculean proportions. A light flashed.

"Halt! Who goes there?"

There was a threatening sound to the voice that came from out of the blackness of the night.

"It's Briggs," answered the foremost figure. "I'm taking a friend through the plant."

The answer seemed to satisfy the voice and Mr. Briggs and his companion continued their journey.

"That's the watchman," explained Mr. Briggs. "We have to keep a pretty close guard out here. You see some fool with a sinister motive might try to do damage around here."

An Unusual Experience.

Visiting an explosive factory at night and a dark, threatening night at that, is an unusual experience, but that is what Mr. Briggs' companion was doing.

The companion was none other than a belated traveler—a representative of "Brick and Clay Record," who was due at the factory of the American Dynalite Co., near Amherst, Ohio, early in the afternoon, but because of circumstances that had caused a delay in his traveling schedule, it was nearly nine o'clock before he reached his destination.

For more than an hour, Mr. Briggs, who is general manager of the American Dynalite Co. and the inventor of Dynalite, with the writer trudged through the darkness of the night. Isolated buildings nestled snugly in little ravines, each standing nearly a quarter of a mile away from the other, as a safety precaution, and despite the fact that high explosives were made in these places, the visitor was taken through each one and the entire process of making dynalite explained to him.

The apparent indifference of Manager Briggs in handling Dynalite as he showed the "Brick and Clay Record" representative the various processes through which it passed in the making, gave the writer more courage and soon he was walking through the maze of machinery, belts and shafting, with the same nonchalance he would display if he were passing down the aisles of a big department store.

An Interesting Process.

It was in the cartridge room that the writer found the most interesting process. Here the manufactured product is placed in the cartridges for the market. It is the custom in most explosive factories to do this loading by hand, but Mr. Briggs, being of rather an inventive turn of mind, built a machine that automatically does the work. This means that cartridges can be loaded many times faster than by hand with less waste of material and with far greater perfection. The machine is a marvel in ingenuity and does its work as nearly like a human being as a machine can do it.

Mr. Briggs, by the small electric light he carried, operated the machine for his visitor's benefit, and one feature of the process caused the writer to start for the door.

"Hey there! It's all right. Come back."

Approaching cautiously, the writer returned to the former position, and with some trepidation watched the movements of the automatic machine. It was not without many misgivings, however, that he observed the explosive as it dropped by gravitation through a large hopper into a loading device and saw small plungers cram the explosive into the cartridges with hammer-like effect.

Then as the loaded cartridges passed from this portion of the machine they were forced out into a small trough, a foot or two long, and suddenly dropped into a box on the floor below. There was a fall of nearly two feet, and as the first cartridge left the trough, the writer again made haste to leave the building. There was no explosion as he expected, except the sudden burst of laughter that came from Mr. Briggs.

When the writer returned to the room Mr. Briggs took him by the arm.

"That goes to prove how safe Dynalite really is," he assured the writer. "Of course it is not fool-proof any more than any other explosive, but it can be handled with safety if ordinary care is used."

After the two had completed the circuit of the small buildings that lined the basin, and reached the open ground beyond the hills, the writer turned and looking back wondered why such a wild spot had been chosen to make Dynalite.

"It is necessary to locate explosive factories in as isolated places as possible," replied Mr. Briggs. "Despite the fact that Dynalite, while being a high explosive, is a safe explosive, the average layman does not look at it in that way. He thinks that an explosive is a dangerous thing to have around, so in locating a factory like this, you must take into consideration the people that live near you.

"This spot is an ideal one," continued Mr. Briggs waving his hands in the direction of the hills back of him. "The buildings are entirely surrounded by a wall of solid rock and should by some accident any one of the buildings let loose, little damage would be done to the outside world."

Showing Effects of Shallow Shot by Dynalite After Being Immersed in Water 24 Hours.

A Stick of Water Grade Dynalite Being Taken from Pool of Water.

Mr. Briggs, apparently, does not have the same fear that the layman has, nor do a number of his neighbors, for their homes back up against the wooded lot on which the factory is located.

The apparent safety with which the Dynalite can be handled impressed the writer very much and when the two returned to Mr. Briggs' residence, he mentioned that fact.

"That is one of the things that has made Dynalite so popular not only among clay plants, but in all industries, where an explosive is required," explained Mr. Briggs. "The dangers involved in the handling of dynamite are numerous and accidents may result from a large number of varying causes.

"The most important and most dangerous constituent of dynamite is nitroglycerine, an explosive which in itself is so uncertain in its character that no rules can be given which can ever make it a safe material to handle. However, the most common accidents resulting from the use of dynamite are those resulting from attempts to dry the material when damp or to thaw same when it is frozen or hardened by frost. This is always a dangerous operation, and yet one that is extremely common in the handling of this explosive.

"Dynamite, to be most effective, must be in a dry and warm condition, and for this reason, it cannot be used in under-water works, or in damp places, unless of a very high grade, and if it absorbs any moisture it becomes ineffective."

The writer suggested to Mr. Briggs that this one point of freezing and the under-water conditions were what made explosives of so little value to clay plants.

"That's just where Dynalite comes in," replied Mr. Briggs.

"You see water has no effect on the water-grade Dynalite, and therefore it is not necessary to have the holes perfectly dry, when the charge is fired. Another point about Dynalite, is that it never needs thawing in cold weather. You may take a stick of it and freeze it and yet explode it with the same ease possible under ordinary circumstances."

"If that is true," replied the writer, "then Dynalite certainly is the proper explosive for the clay plant, both winter and summer. To my knowledge most of the accidents that occur in the use of explosives result from thawing of dynamite. No matter how careful a man may be in thawing it, there comes a time when he is careless and fatality results."

Mr. Briggs, to illustrate his point, called attention to tests made by "Brick and Clay Record" last winter, and cited photographs which are reproduced with this article. At that time another representative of "Brick and Clay Record" witnessed the experiment of exploding Dynalite in a pool of water. The water absolutely had no effect on the explosive, and a geyser several feet in height was formed. At another test a stick of Dynalite was allowed to remain in a pool of water for twenty-four hours and then taken out and exploded. This severe treatment did not diminish the explosive force of the Dynalite.

In another test made in mid-winter a stick of Dynalite was subjected to freezing weather and while in a frozen condition, was used for blasting a large rock with the same effect as if the explosive had not been frozen.

In the six years that Dynalite has been on the market it has proven every claim made for it by its inventor and has proven the only successful superior substitute for dynamite ever placed before the high explosive consuming public.

Reports from various sources show that conditions never were brighter in the building world. The optomistic clay worker who foresaw and forestalled will be ready to deliver the goods.

INFLUENCE OF THE SUN ON BRICKWORK

Expert Points Out that "Drawing" Power of Orb Pulls all Construction Work Out of Plumb to Some Extent

By OWEN B. MAGINNIS

EVERYTHING in nature is more or less affected by the rays of the sun, from the particles of material which compose the surface of the earth and the tiniest blade of grass up to the finest specimens of man or woman, in fact, all creation is indebted for its existence to this marvelous orb of day.

In the primitive days, brick were molded by hand to the shape desired and then baked hard by the action of the air and sun but this has long been superseded by the intense heat of the drier and kiln, making the process more rapid. However, the intent and purpose of this article is to inquire into the effect of the sun on the brick when laid in walls, chimneys, etc. Have you ever observed the condition of the ordinary brick chimneys which project above the roofs of frame or brick houses? These comparatively humble details of modern architecture play a part in the promotion of human happiness which has never been appreciated, except by those initiated into the science of building construction; yet they are just as indispensable as any other part of the component details of a building. The sun, however, like all other elements, constantly existent, either improves or injures anything exposed to its influence, and the effect of its rays on these, the uppermost parts of buildings, is most deleterious and baleful, for the following reasons:

Let us briefly trace the course of the sun in its daily orbit. Commencing in the east it rises above the horizon and, its rays gradually passing from a horizontal to an oblique direction immediately commence to exert a heating and absorptive influence on all things terrestrial, and brickwork is in the natural order subject to this influence. Presuming that the sun's rays have been without diminution or lack of power for even one day, it is safe to infer that it has altered the condition of everything on earth to a greater or less degree, and so it likewise affects brickwork as we will endeavor to explain. The sun's orbit from the earth is from east to west, and its course is in a southerly oblique direction, so that its rays are continually concentrated on all objects having an easterly, westerly, and southerly exposure, and it is here we see the effect it has on such simple details as chimneys, etc. The observer will note that all hollow chimneys of such thickness as four, eight or twelve inches of brickwork and ranging in height from two to twelve feet, are invariably out of plumb, and camber or bend towards the west if their widest elevation is thus exposed, or to the south if the elevation be thus, or to be more explicit, houses, the front elevation of which run east and west and have their chimneys at right angles to the front or street line always bend to the north and those having their front elevations directly north and south bend to the west, the reason being that the side removed from the action of the sun's rays is cool, and contracted, and the drawing power tends to make the mass bulge and expand to the east and south and contract to the west and north, also to lean out of plumb, the tops overhanging in a westerly and northerly direction.

The shell of ordinary domestic chimneys being very thin, it follows that there is, on account of the flues, hollow spaces in the section. There is no mass strong enough to resist successfully the tremendous influence of the rays or the counteracting influence of the cold, which according to the laws of expansion and contraction must of necessity change the form of the brickwork. As cold contracts all materials and heat expands, then it follows that the north and west sides of the chimneys, or rather surfaces being continuously cool, and in the winter or cold seasons being extremely cold, the contraction is in proportion to the extent of the lowness of the temperature. From this it can be assumed that every form of construction changes its shape to a more or less degree according to its ability to resist the influences exerted. Masses of brickwork of whatever thickness they may be, are compelled to yield to the forces acting on them and it is not uncommon to see, in northern latitudes, such details as belfries, isolated towers, pinnacles, turrets, piers, etc., overhanging and out of plumb in the direction as heretofore described.

As to the influence of the sun on the surface of brickwork of extensive area such as gable walls, elevations or tall smoke stacks, it is to be said that it is in these cases that its effects are most perceptible and frequently dangerous, for the reason that, as the attraction is in direct proportion to the area exposed, its power will be more active and deleterious on large, than small, areas. To illustrate this we will give an example. During the winter months, the sun in northern latitudes has little or no absorptive and expansive power, and brickwork constructed in this season of the year will remain firm during the continuance of cold weather, but when spring arrives and the heat of the sun becomes active and dominant it will work havoc. It must be remembered that while the cold weather lasted both sides of the wall or walls were subject to the same temperature, before the building was enclosed or any kind of artificial heat introduced within its walls, but in spring and summer the sun's rays spread daily unrelentingly over the outside surface, gradually and slowly expanding and drawing the mass towards itself so that the wall being tied only by bonding or anchoring at the edges or corners becomes warped, bulged, out of plumb and generally distorted. This is much more evident when the brickwork is laid in cold, frosty, or snowy weather, as the porosity of the bricks in their minute perforations having absorbed frost to a great degree will expand, not to mention the expansion of water in the mortar, which has not yet dried out but has remained dormant in the form of ice all through the winter. It has been proved that beam anchors have not sufficient strength to resist the bulging or warping of walls.

It is therefore a rational conclusion that the side unexposed to the sun would retain its original condition, while that on which the rays of the sun beat must expand and increase its superficial area in proportion to the extent of the expansion and such a wall will become out of plumb and unsafe.

The same inference might be drawn in regard to structures of great height or width such as the plain surfaces of lofty office or apartment buildings, smokestacks, etc., especially if the latter be of a square or horizontal construction. On this account the use of a circular, horizontal or octagonal section is now almost universal for smokestacks of great height, this being the safest for resisting all solar and climatic influences.

The question of mortar enters largely into the consideration of the permanent stability of brickwork, in every condition, and it must be admitted that the introduction and use of Portland cement as an ingredient has done much to offset the evils which were formerly so prevalent in lime mortar, for not only does it give greater adhesiveness and density, but also greater imperviousness, thus preventing early damage or decay.

In conclusion it might be said that the method and value of good workmanship helps to regulate, to a certain extent, the result of the sun's damaging action, good workmanship with first class materials doing much to offset the injurious effect of the sun's rays. Even then there some changes will take place, during the lapse of time, but if walls be well anchored and braced, the change is so slight as to be of no serious consequence.

* * *

FINDS ELECTRIC DRIVE CHEAP

Georgia Plant Uses Power to Advantage Finding It Not Only Economical but Dependable at all Times

The Bibb Brick Co. of Macon, Ga., is representative of a large class of moderate sized plants which are finding electrical operation greatly to their advantage. This plant, which has a capacity of 200,000 common brick per day, was formerly operated by a 350-h. p. single-cylinder, non-condensing Corliss engine belted to a heavy countershaft. Realizing the many advantages of electrical operation the company decided to install an electric drive and selected a direct-geared drive as the one providing the most dependable service. They have two No. 8 Chamber Bros. auger brick machines, each having a normal capacity of 100,000 brick per diem, when driven at 250 r. p. m. These are each driven by a 100-h. p., 550-volt induction motor with phase wound rotor and external resistance, capable of operating continuously at 80 per cent of its normal speed. This latter feature was necessary owing to the fact that the clay pits contained strata bearing considerable sand and when using clay from this source it was necessary to operate the augers at a lower speed. This type of motor is well adapted to the conditions of this service which requires frequent starting under full load conditions, heavy overload for short periods, etc.

The chart taken from a recording wattmeter gives a graphic record of the combined load on the two motors and shows the variations in the amount of power consumed.

A clay granulator, capable of supplying approximately 25 per cent more material than is normally required, feeds these brick machines. It is driven by a 75-h. p. 550-volt induction motor of the same design as those that drive the brick machines and has a starting torque equivalent to approximately three times the normal full load torque.

There is a motor driven centrifugal pump at the clay pits to dispose of the seepage. This pump is direct connected to a 25-h. p. 550-volt induction motor of the squirrel-cage type and has a normal capacity of 1,000 gallons per minute.

The power for this plant is furnished by the Central Georgia Power Co. and delivered at a potential of 4,500 volts

The electrical apparatus used at this plant was supplied by the General Electric Co., Schenectady, N. Y.

CLAYWORKER SEEKS OFFICE

Kentucky Manufacturer of Brick "Drafted into the Army"—Runs for Congress on Roosevelt Ticket

E. S. Hitchens, manufacturer of fire brick of Olive Hill, Ky., is a candidate for Congress in the Ninth District of his state on the Roosevelt Progressive ticket, and is making a whirlwind campaign. In a circular which he issued to the voters he says:

"It was not because I wanted the job that I entered the campaign, but because, like Gov. Hiram Johnson, I enlisted for the war and was drafted for the place."

E. S. Hitchins.

Mr. Hitchens has the best wishes of the clayworkers throughout the United States, irrespective of party or creed.

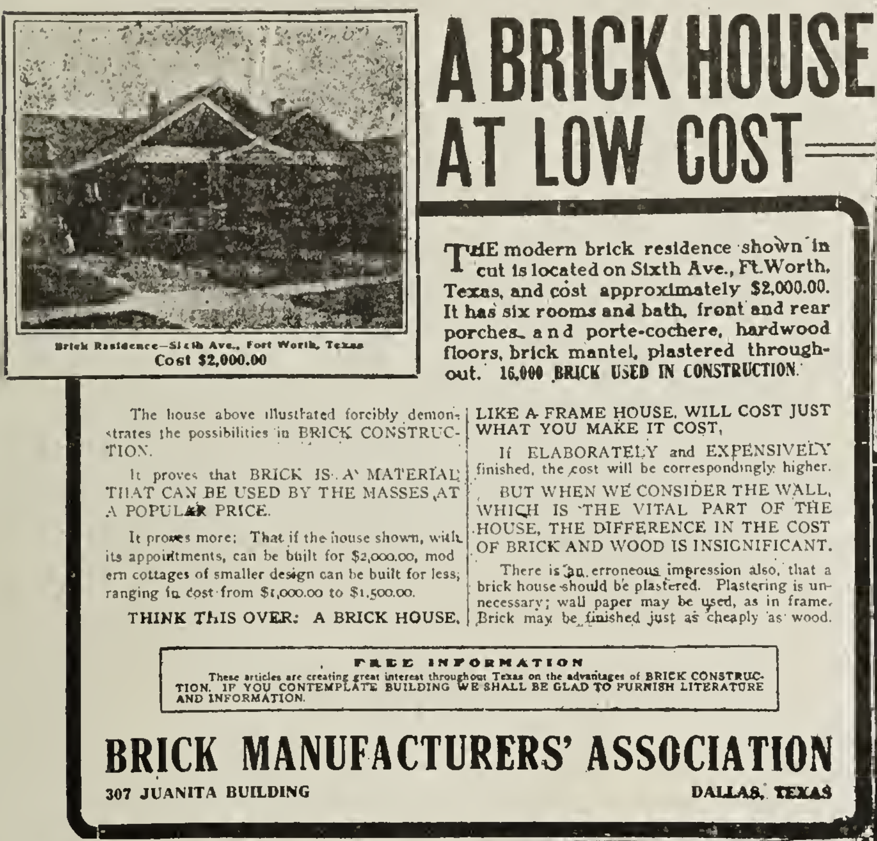
If your factory buildings are old ramshackle frame affairs, why not replace them with brick or hollow block structures, that you can point to with pride? If you do not feel that you can afford to use No. 1 ware, culls would probably answer the purpose and would at least be proof against fire.

PROVE VALUE OF LOCAL ORGANIZATION

Dallas, Texas, Brick Manufacturers Show How Association Work Increases Demand and Prices and Insures Firmness in Market

THE brick manufacturers down in Dallas, Texas, know the value of local organization and publicity campaigns as means of creating a demand for their products.

Inspired by the spirit of organization that is in the air, and encouraged by the editorials that have appeared in "Brick and Clay Record," these Texans, recently formed into the Brick Manufacturers' Association of Dallas, decided to join hands in a general publicity campaign, and their first step was to employ the services of a competent advertising man. This done, they gave him ample funds to work with, and carte blanche as to his publicity plans.



A BRICK HOUSE AT LOW COST

Brick Residence—Sixth Ave., Fort Worth, Texas
Cost $2,000.00

THE modern brick residence shown in cut is located on Sixth Ave., Ft. Worth, Texas, and cost approximately $2,000.00. It has six rooms and bath, front and rear porches and porte-cochere, hardwood floors, brick mantel, plastered throughout. 16,000 BRICK USED IN CONSTRUCTION.

The house above illustrated forcibly demonstrates the possibilities in BRICK CONSTRUCTION.

It proves that BRICK IS A MATERIAL THAT CAN BE USED BY THE MASSES AT A POPULAR PRICE.

It proves more: That if the house shown, with its appointments, can be built for $2,000.00, modern cottages of smaller design can be built for less, ranging in cost from $1,000.00 to $1,500.00.

THINK THIS OVER: A BRICK HOUSE, LIKE A FRAME HOUSE, WILL COST JUST WHAT YOU MAKE IT COST.

If ELABORATELY and EXPENSIVELY finished, the cost will be correspondingly higher.

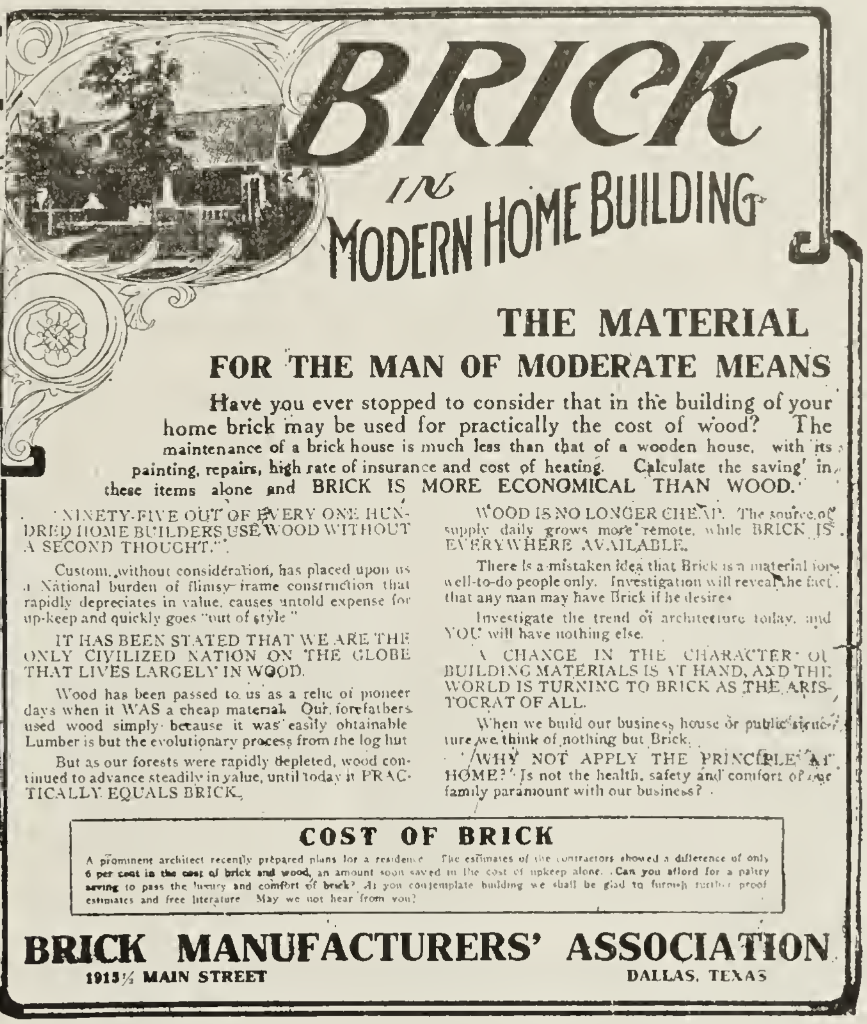
BUT WHEN WE CONSIDER THE WALL, WHICH IS THE VITAL PART OF THE HOUSE, THE DIFFERENCE IN THE COST OF BRICK AND WOOD IS INSIGNIFICANT.

There is an erroneous impression also, that a brick house should be plastered. Plastering is unnecessary; wall paper may be used, as in frame. Brick may be finished just as cheaply as wood.

FREE INFORMATION

These articles are creating great interest throughout Texas on the advantages of BRICK CONSTRUCTION. IF YOU CONTEMPLATE BUILDING WE SHALL BE GLAD TO FURNISH LITERATURE AND INFORMATION.

BRICK MANUFACTURERS' ASSOCIATION
307 JUANITA BUILDING DALLAS, TEXAS



BRICK IN MODERN HOME BUILDING

THE MATERIAL FOR THE MAN OF MODERATE MEANS

Have you ever stopped to consider that in the building of your home brick may be used for practically the cost of wood? The maintenance of a brick house is much less than that of a wooden house, with its painting, repairs, high rate of insurance and cost of heating. Calculate the saving in these items alone and BRICK IS MORE ECONOMICAL THAN WOOD.

"NINETY-FIVE OUT OF EVERY ONE HUNDRED HOME BUILDERS USE WOOD WITHOUT A SECOND THOUGHT."

Custom, without consideration, has placed upon us a National burden of flimsy frame construction that rapidly depreciates in value, causes untold expense for up-keep and quickly goes "out of style."

IT HAS BEEN STATED THAT WE ARE THE ONLY CIVILIZED NATION ON THE GLOBE THAT LIVES LARGELY IN WOOD.

Wood has been passed to us as a relic of pioneer days when it WAS a cheap material. Our forefathers used wood simply because it was easily obtainable. Lumber is but the evolutionary process from the log hut.

But as our forests were rapidly depleted, wood continued to advance steadily in value, until today it PRACTICALLY EQUALS BRICK.

WOOD IS NO LONGER CHEAP. The source of supply daily grows more remote, while BRICK IS EVERYWHERE AVAILABLE.

There is a mistaken idea that Brick is a material for well-to-do people only. Investigation will reveal the fact that any man may have Brick if he desires.

Investigate the trend of architecture today, and YOU will have nothing else.

A CHANGE IN THE CHARACTER OF BUILDING MATERIALS IS AT HAND, AND THE WORLD IS TURNING TO BRICK AS THE ARISTOCRAT OF ALL.

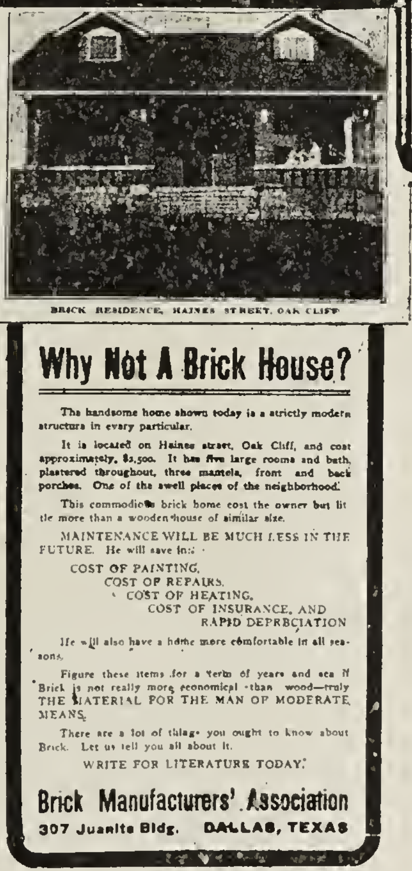
When we build our business house or public structure we think of nothing but Brick.

"WHY NOT APPLY THE PRINCIPLE AT HOME?" Is not the health, safety and comfort of our family paramount with our business?

COST OF BRICK

A prominent architect recently prepared plans for a residence. The estimates of the contractors showed a difference of only 6 per cent in the cost of brick and wood, an amount soon saved in the cost of upkeep alone. Can you afford for a paltry saving to pass the luxury and comfort of brick? As you contemplate building we shall be glad to furnish further proof, estimates and free literature. May we not hear from you?

BRICK MANUFACTURERS' ASSOCIATION
1913½ MAIN STREET DALLAS, TEXAS



BRICK RESIDENCE, HAINES STREET, OAK CLIFF

Why Not A Brick House?

The handsome home shown today is a strictly modern structure in every particular.

It is located on Haines street, Oak Cliff, and cost approximately $2,500. It has five large rooms and bath, plastered throughout, three mantels, front and back porches. One of the swell places of the neighborhood.

This commodious brick home cost the owner but little more than a wooden house of similar size.

MAINTENANCE WILL BE MUCH LESS IN THE FUTURE. He will save in:

COST OF PAINTING,
COST OF REPAIRS,
COST OF HEATING,
COST OF INSURANCE, AND
RAPID DEPRECIATION

He will also have a home more comfortable in all seasons.

Figure these items for a term of years and see if Brick is not really more economical than wood—truly THE MATERIAL FOR THE MAN OF MODERATE MEANS.

There are a lot of things you ought to know about Brick. Let us tell you all about it.

WRITE FOR LITERATURE TODAY.

Brick Manufacturers' Association
307 Juanita Bldg. DALLAS, TEXAS

The publicity campaign was begun some three or four weeks ago, a quarter page advertisement appearing in the Sunday papers of Dallas. One of the members of the association, in writing to the editor of "Brick and Clay Record" on Monday, following the Sunday on which the first "ad." appeared, stated that at that hour, 10 o'clock, his office had been besieged by telephone calls, personal inquiries and by letters from correspondents who seemed to realize for the first time, that brick was the material from which to build houses.

The editor of this journal was very much interested in the Dallas campaign, and wrote the Fraser Brick Co., which is a member of the Dallas association, requesting a report on the advertising as soon as it was able to judge definitely of the results. Under date of October 24th, J. H. Payne, writing for the Fraser Co., replied:

"You now have the first four ads in this series which the Brick Manufacturers' Association has been conducting, and you will, we believe, be pleased to know that the effect of this campaign has been felt, and numerous inquiries have come from parties who have stated that they had intended to build of frame under the impression that the cost of brick or brick veneer would be prohibitive.

"Results have also come in the way of increased sales, as shown by the reports made each week by the various manufacturers comprising the association.

"Another excellent result is seen in the firmness of the price on common brick in this market.

"The makers are now getting a figure which leaves them a fair margin,—something which has not been the case for the past six years.

"The improvement of conditions generally is partly responsible for this, but they are all confident that this advertising campaign is creating a larger demand, and thus helping them to secure the proper price for their product.

"Just now the Texas State Fair is in progress here, and it is an institution which brings hundreds of thousands of visitors from all parts of the southwest to Dallas, and we have to devote the most of the time to entertaining visitors.

"This of course has its effect upon the placing of business, and to have secured the results which this campaign has with such a condition makes us confident that after the close of the fair next week a large amount of business will come in which has been postponed until after the first of November."

There are four strong points to be found in the campaign conducted by the Dallas Association:

First: The organized publicity campaign has increased the sales of each one of the members of the organization.

Second: It has insured firmness in the price of common brick on their local market.

Third: It has interested many prospective builders in the use of brick as a material, who never knew of clay products, or if they did, considered them beyond **their means.**

Fourth: Manufacturers, by co-operation and perfect understanding as to trade relations, are now getting a price for their product which leaves them a fair margin, a condition which has not existed for the past six years.

The experience of the Dallas Brick Manufacturers' Association, proves that the statements made in the editorial columns of this journal, from time to time, have not been exaggerated, and that local co-operation and organization means increased sales, better prices and a general improvement in trade all around.

If there are any "doubting Thomases" among those who read, let them write to Mr. Payne of the Fraser Brick Co., or to any other member of the Brick Manufacturers' Association of Dallas, Tex. We are sure that any of these gentlemen will be pleased to supply any information that may be required.

FAMOUS OLD LANDMARK.

Shot Tower, Original "Sky Scraper," Unique Brick Building Built in Baltimore, in 1828.

One of the most interesting old brick buildings in the East is the shot tower in Baltimore, Md., a structure that is unique today, inasmuch as it is the only one of its kind left. It is, perhaps, the most familiar landmark of the Monumental City and although its owners have several times suggested tearing it down, sentiment is so strong that it will probably stand for a great many years to come as the brickwork is in excellent condition.

Interesting Historic Relic—Old Brick Shot Tower at Baltimore, Md.

This tower is the original "skyscraper" and, even today, it is exceeded in height only by what are known as tower buildings. It is 234¼ feet from the pavement to the top, is 40 feet in diameter at its base and 20 feet in diameter at its top. The foundation is 17 feet below the street level and rests upon solid rock. At the foundation, the wall is 10 feet through and it tapers to 20 inches at the top. It is estimated that 2,000,000 brick were used in its construction. One of the features of the building of the structure is that it was erected without outside scaffolding.

The cornerstone was laid by Charles Carroll, one of the signers of the Declaration of Independence, on June 2, 1828 and the tower was completed on November 25 of that year, which is not a bad record for brick tower construction. From its completion until 1892 the building was in constant use and it turned out bullets used in both the Mexican and Civil wars. Since 1892, when the methods of making shot and bullets were changed by the introduction of machinery, the building has not been in use.

Don't think because you do not approve of the other fellow's ways he is wrong. You may be behind the times.

ARCHITECTS RECOMMEND BRICK.

Big American Society Says that Brick Work Far Surpasses Any Other Material.

The following, taken from the 1912 year book of the American Society of Architects, is encouraging, as it places brick in the first rank among building materials:

"After exhaustve research and thorough investigation, including the severest fire and water tests that could be applied to building construction, we do not hesitate to say that brick work far surpasses any other form of construction work known to science. Either structural steel or concrete measures up to commercial tests, as originally known, but where these materials have been subjected to extreme heat and streams of water have been applied to buildings constructed of these materials, under these conditions the results have been disastrous.

"Building brick in the course of manufacture is subjected to from 2,800 to 4,000 degrees Fahrenheit, hence all the combustible material has been consumed, and consequently no fire that can be later applied can affect it. Because of the economy of transportation and the facility with which this material can be laid in a building, there is a very noticeable 'back to brick' movement in all forms of construction.

"The crushing strength likewise demonstrates the superiority of this material. Hard, well-burned brick, such as that manufactured in the Hudson river valley, will stand from 3,000 to 5,000 per square inch."

Speaking of the economical side of common brick as a building material the article goes on to say:

"A further evidence of the indestructibility of brick is the fact that when a building is demolished, common brick can be readily cleaned and economically delivered and relaid without showing any marked deterioration."

Credit to Whom Credit Is Due.

In the report of the American Road Congress, in our last issue, through an oversight, we failed to give credit to T. A. Randall, secretary of the National Brick Manufacturers' Association, for his courtesy in supplying us with the photographs accompanying his address on "Good and Poor Brick Roads."

Slip a dollar bill in an envelope and renew your subscription.

BRICK PLANT INSPIRES PROPER SPIRIT

Wyoming Concern Takes Prominent Part in Get-together Movement in Which Local Manufacturers Join and Make a Success

THE get-together spirit is spreading. It has reached Sheridan, Wyo., and it is significant that one of the principal agents in injecting the serum of business activity into the people in that city is a clay product concern.

Sheridan is a little city of 10,000—not so large when you think of the centers of population, but you must remember that big cities are not so plentiful in Wyoming and that Sheridan, as they rate cities out there, is "some pumpkins."

Recently Sheridan held a county fair—one of those annual affairs which attract everybody for miles around. Usually a county fair is conducted in the interest of the farmer. Prizes are offered for the best Berkshire, the best Norman, the best Herefords and all those things, but little attention is paid to the man engaged in industrial pursuits.

Where the Sheridan Brick Are Made.

Sheridan manufacturers are not the sort to sit back and let any one monopolize a good thing. So, prompted by George H. Cutter and Carl F. Kneisel, of the Sheridan Press Brick & Tile Co., they got together. What was the result?

First, the Sheridan Business Men's Club called a meeting and of course in the front row at the meeting were Mr. Cutter and Mr. Kneisel. The club decided it was going to have a special show of its own. So it planned a "Made-in-Sheridan" exposition, rented the Kirby Opera House, and got busy with exhibits.

The great hall was divided into booths and every manufacturing industry in the little city was invited to participate.

The invitation was not ignored. That isn't the sort of manufacturers they have in Sheridan. All were there and one of the most conspicuous exhibits was, of course, made by the Sheridan Press Brick & Tile Co., which owns the only brick plant in Sheridan. It is the only press brick plant in Northern Wyoming, and it is safe to say there were a great many visitors at the show who, imbued with their first knowledge of the beauty of building brick, went home converts to clay products.

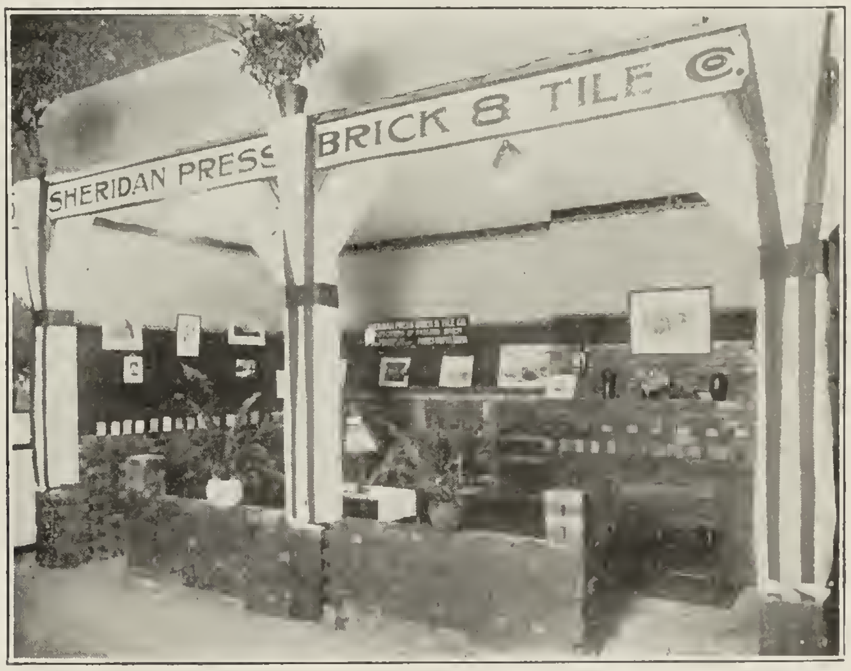
The Press Brick Co.'s booth was the center of attraction at the show. Upon approaching it one's gaze first rested on a wall of red and black end brick laid up with loose, Flemish bond. At each end of this was was an entrance. Opposite the right hand entrance there was a fireplace built of brown brick, laid in colored mortar, trimmed with red and buff brick below shelf line. Above the shelf line, for eight courses, the brick were of a chocolate color also laid in mortar. The recess around the grate was built of buff brick laid in mortar. Although no fire could be put in the grate because of the fire laws, yet by the use of a red electric light, concealed among the coal and strips of colored paper propelled by an electric fan in the rear of the grate, the flame effect was very realistic.

To the left of the fireplace an eight-inch wall was built, the full length of the booth and almost as high as the fireplace, all of chocolate colored brick except six panels, which were of buff-colored brick.

At the west end of the booth there was an eight-inch wall of light brown and black end brick laid up with loose Flemish bond. Upon this wall was a sample of each shade of brick used in the exhibit.

At the other end of the booth there was a small quantity of round edge brick laid up loose to show that this popular kind also was being made.

This company is putting forth every effort to impress upon the mind of the Sheridan builder the advantage of brick over other material for the entire building, even when it comes to the foundation. Recently, by bringing out this fact to the builders of two brick buildings the company succeeded in having them use hard burned arch brick instead of concrete. This change amounted to an addition of 40,000 brick to the original order.



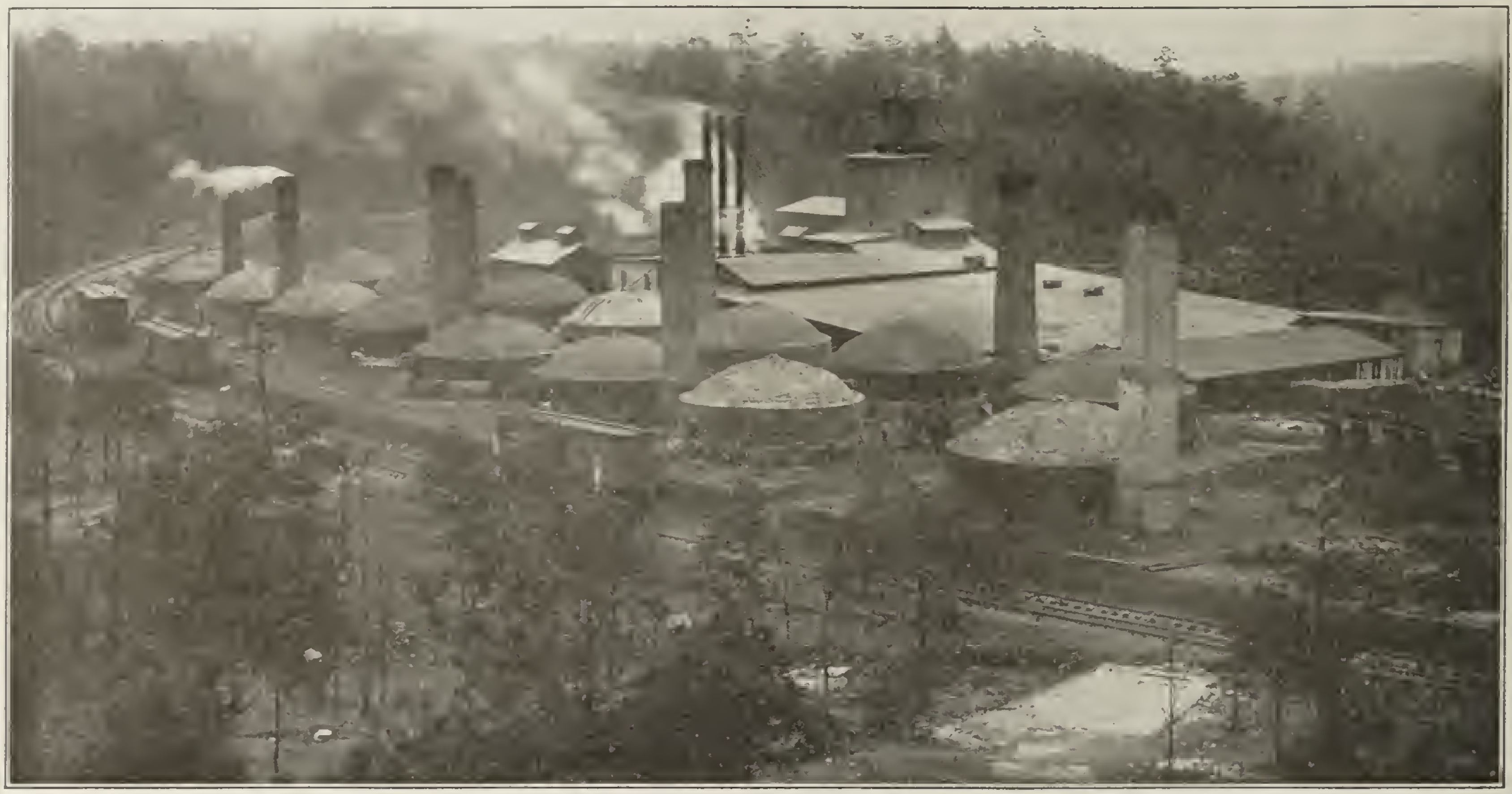
Brick Display Which Attracted Much Attention at the Sheridan, Wyo., Fair.

The same spirit manifested by the Sheridan plant is just what is required in every locality. Let the people know you are alive.

IN THE REALM OF PUBLICITY.

"Missabe Dippers for Steam Shovels and Dipper Dredges," or "Bulletin 51," has just been published, and is now ready for distribution by the Edgar Allen American Manganese Steel Co., McCormick Building, Chicago, Ill. Those desiring copies may secure them by writing the company at the above address.

PROSPEROUS SOUTHERN STIFF MUD PLANT IN ALABAMA



Well Laid Out Plant of L. L. Stephenson at Lovick, Ala.

Twelve miles from Birmingham, at Lovick, Ala., is situated the splendid plant of L. L. Stephenson. The stiff mud process is used in manufacturing face brick, which are burned in sixteen round down draft kilns, with a capacity of 100,000 each per month. The output consists entirely of face brick, which is sold by the Brick Selling Co., of Birmingham, of which Mr. Stephenson is president, B. Miffin Hood, of Atlanta, Ga., and the Memphis Brick Supply Co., of Memphis, Tenn., of which Frank H. Reid is general manager. Among some of the large contracts recently supplied from the Stephenson plant are face brick for the Elks' Club Bldg., Atlanta, Ga., the Halle-Loeb Bldg., Memphis, Tenn., and both the new Y. M. C. A. and the Y. W. C. A. buildings in Birmingham.

SOUNDS A TIMELY WARNING

Fire Losses Cause Insurance Men to Urge Greater Use of Clay Products for Building Materials as Prevention

The following appeared in a special edition of the Chicago Evening Post, September 28. This edition was one of four devoted to building and it is encouraging to note that clay products played an important part in these issues.

"The fire loss in four months in 1911 amounted to $70,000,000, an increase of $30,000,000 over the same period for 1910. The March fire loss was upward of $31,000,000. Except that of September, 1910, when there were numerous and heavy forest fires, March exceeded any previous year in the magnitude of its fire loss, eliminating those months in which there has been a conflagration.

"The alarming increase in loss the first quarter of the year attracted the attention of insurance interests and fire prevention experts. Its effect was seen in insurance circles, as a number of companies retired and others weakened.

"Insurance men feel that the public must take up the consideration of the enormous fire waste in a sane and forceful way and endeavor to slow down on the $250,000,000 annual drain from the fire fiend.

"This can best be done by the use of burned clay building material. A building fireproofed with burned clay is practically impervious to fire."

BUILDERS HAVE A NEW HOME

Fine Permanent Quarters in Chicago Office Building Where they May Show their Materials to Prospective Buyers

Since the anouncement of the inauguration of the Builders' Permanent Exhibit and Market of Building Materials and Supplies, to be opened on the second floor in the new Karpen Building, on Michigan Ave., in the early part of December, there has been considerable interest aroused. The object of this exposition will be to place under one roof a complete and classified list of materials that enter into the construction of all kinds of buildings. In addition to this there will be office spaces, and conveniences for the renters, and other adjuncts that will make it an attractive place for the manufacturer, dealer and customer. It will, it is said, differ from the permanent exhibit of the builders' exchanges, as noted in a number of cities, and will offer some unique features that will make it unusually interesting.

Efforts are now being made to induce leading manufacturers and dealers in clay products to prepare a joint exhibit which would make possible a low cost display, with the advantage of continued publicity. Under the management of John W. Northrop it is hoped that an exposition will be possible that will boost the city of Chicago as a building material center, and be of material assistance to clay manufacturers in promoting the use of clay products.

ADVOCATES GAS KILNS AND PRODUCERS

Writer Makes Comparison Between Direct-Fired, So-Called Patent Kiln and the Modern Producer Gas-Fired Kiln

By E. SCHMATOLLA

Copyright, 1911, By E. Schmatolla.

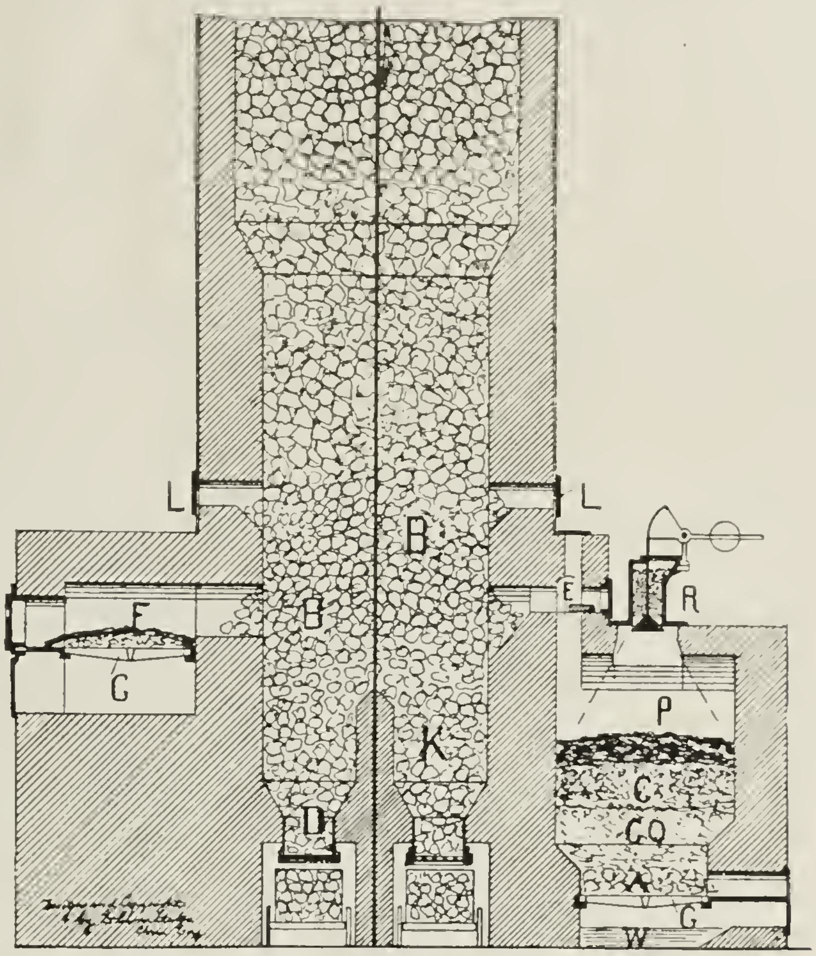
MANY manufacturers have wrong ideas of gas producers and gas kilns, many of them thinking that gas kilns and gas producers are complicated mechanisms. For the purpose of illustrating the gas producer and gas kiln, and to show that both are not more complicated than the common furnace and kiln, I have drawn the accompanying sketch of a so-called double draw kiln of a well-known American type, showing on the left side of the heavily marked center line the old-fashioned outfit with a grate furnace, FG, and an air-tight closed draw pit, D, and on the right side of the center line, the same kiln with a modern outfit, showing one gas producer, P, instead of the two or four furnaces and an open cooler, K, which allows the air to enter the kiln through the draw pit and to draw a completely cool lime, which means utilizing the heat of the burnt lime and handling cold lime.

The comparison with the furnace, F, (of which one double draw kiln has usually four) which can be easily replaced by one gas producer, shows that the gas producer is similar to a furnace and not more complicated, having a common grate, G, as the furnace, on which the fuel is completely consumed leaving only ashes or clinkers. The main difference between both is that the grate of the gas producer is several feet below the arches and that a much thicker layer of coal or other fuel is kept on top of the grate, which causes the gasification of the fuel.

Letter A marks a layer of clinkered ashes, W, water standing under the grate, G, both protecting the grate. In the next layer, CO, the fuel is burnt or completely consumed by the oxygen of the air which enters through the grate and carbon monoxide is formed by the decomposition of the carbon dioxide, the product of complete combustion; the carbon monoxide is a well-known combustible gas.

In the layer C, the coal is transformed into coke (or charcoal if the fuel is wood), and the hydrogen and illuminating gas, of which most American soft coals contain between thirty and forty per cent, is escaping and enriching the gas which has been formed in the layers, CO. Of course the decomposition and distillation processes consume heat, and therefore, the temperature of the layers on top of the fuel bed is comparatively low. Therefore the fresh coal, which is fed through the double valve gas-tight hopper, R, is not spontaneously, but gradually heated, giving a uniform evolution of the gas of comparatively low temperature. The advantage of this is that the arches and the cast iron feeders are not attacked by high temperature and can stand many years without needing any repairs.

On the other hand, if the coal is thrown into the common furnace, F, in which a high temperature prevails, the coal gas—thirty to forty per cent of the weight, and nearly half or more of the heating efficiency of the coal—is escaping spontaneously in large quantities and under pressure, not allowing the air to reach it and consume this gas and most of it is escaping unutilized with a cloud of smoke. This, of course, meaning a loss of twenty to fifty per cent of the useful efficiency or value of the coal—the coal gas having more heating value than the fixed carbon. In fact, not sooner than after most of the coal gas has been driven out of the coal, the temperature in the fire box, F, rises by complete combustion of the carbon, giving a very hot but short flame, which is more destructive to the arches and lining than burning lime, as the flame hardly reaches the center of the kiln.



Schmatolla Gas Producer and Gas-Fired Kiln.

Another very important advantage is that one gas kiln with one gas producer can be built much larger up to fifty tons daily output and more; that this output can be regulated according to the conditions of the trade and season; that mechanical feeding and drawing devices may be used, which means saving of labor to a great extent.

One advantage which may become very important in the future, is that the top gas of the gas kiln is very pure, and contains more than thirty per cent of carbonic acid; whilst the furnace kiln gives a very poor and impure kiln gas, good for nothing except spoiling the surroundings.

The kiln gas of the gas kiln may be used for manufacturing by-products and lime products; as, for example, carbonic acid, recarbonated lime products, whiting, plaster, artificial limestone, sandstone, brick, different chemical products, etc.

Interesting Specimen of Toltec Pottery Found.

Workmen excavating for a water subway, in Mexico City, recently came upon a rare specimen of Toltec pottery, estimated to be upwards of 1,100 years old. It is in the form of a pitcher of delicate design and is of the most ancient type of Toltec pottery, much sought by archaeologists. The specimen is known as the "Black San Juan de Teotihucan."

REMARKABLE "FIND" IN BARREL OF BRICK.

Torn Pages of "Brick and Clay Record" Excite Interest of Clay Product Man and He Wants Complete Copy.

We often hear stories of remarkable "finds" in consignments of freight, but the circumstances set forth in the following letter is a little out of the ordinary, to say the least, and only goes to prove that "Truth is stranger than fiction.'

Gentlemen: We would like to know by return mail if the magazine, "Brick and Clay Record," is still published. I found parts of your magazine for January 1, 1911, packed in a barrel of brick that came from Pennsylvania and was so much interested in it that I would like to have a complete copy. Thomas A. Carey, Newark, N. J.

RELATION BETWEEN BRICK AND STEEL.

Increased Demand for Structural Iron Means 300,000,000 More Brick in New York Before January 1, 1913.

The marked relation between the rise in steel and brick, cement and other basic building materials, is shown in a report of the United States Steel Corporation, which says that by the first of January it will be between 7,000,000 and 8,000,000 tons behind on new orders. The encouraging part of it is that for every ton of structural steel that goes into a building, about 300 common brick are figured. Based upon a possible steel requirement in New York City of 400,000 tons a month, or approximately 1,000,000 tons, this will call for 300,000,000 common brick before January 1.

LUMBER MEN OF THE NATION FORM ASSOCIATION

(Continued from Page 330.)

the sentiment of this union is representative of the estimation in which wood block pavement is held by teamsters.

"This union and all teamsters are opposed to wooden block paving of any downtown street or heavy teaming avenue," was the declaration made by a unanimous vote of Boston's teamsters' union 25.

The teamsters assert that the paving makes teaming hard and dangerous and that it is absolute cruelty to animals to attempt to start a horse on such paving in any kind of weather or to drive one over wooden blocks in damp, wet or slippery weather.

To pave additional main teaming ways with the blocks, they maintain, will be a hardship and greater expense to all Boston merchants and on all freight hauled by teams across the city.

Slippery Wood Blocks Injure Many Horses.

Merchants of Atlanta, Ga., are "up in arms" over the condition of Broad St., in the commission house district, which is paved with wood block. After a rain this pavement is as slippery as glass and one morning alone 25 mules and horses were seen to fall on the pavement, before ten o'clock in the morning. One of the animals, valued at $250, owned by the Southern Express Co., broke its leg and had to be killed. Commission merchants complain bitterly over the delay in getting out their orders, on account of the state of the pavement and while sand is used generously, the rain soon washes this away and the consequence is that many horses are seriously injured. One merchant said: "There is some graft behind this deal or these wooden block would not be used instead of stone or vitrified brick. A man does not like to see horses lying around his door for several hours with their legs broken and it seems to me the Humane Society would do well to take the matter up."

The Atlanta merchants petitioned the council for relief from conditions brought about by wood block pavement and strongly urged that the useless slaughter to dumb animals be stopped.

Lumbermen Busy in South.

The following letter from our Texas correspondent is timely and shows that active measures must be taken by paving brick interests to show to the public the fallacy of using wood block for paving purposes.

Austin, Texas, October 23.—Notable results are being obtained by the lumber manufacturers in their campaign for the use of creosoted pine wood blocks for street paving purposes in Texas. In nearly all the recent municipal estimates for paving work wood blocks are included. This campaign is being so persistently waged by the lumber interests that it is having a serious effect upon the manufacturers of paving brick in this territory, it is claimed. It shows what may be accomplished through judicious and well directed efforts on behalf of a paving material.

The necessity of counteracting in some manner this general change of public sentiment in favor of pine wood block to the detriment of brick paving is felt by manufacturers of pavers in this state. It is stated the same condition is true in Louisiana, as well as in other parts of the country where the lumber manufacturers are carrying on their campaign for a more widespread use of pine blocks.

Recently, in furtherance of this wood block movement, municipal authorities have been urged by manufacturers of that material to omit the specification for a 95 per cent "heart" and simply include in future specifications that the wood blocks shall be sawed "square and sound." It is claimed by the promoters of this proposed change in specifications that "square and sound" blocks or those which do not carry a "heart" are practically as durable as the "heart" blocks and that by using the "square and sound" blocks a saving of about 13 cents per yard to the city using same will be effected.

Men who are well informed as to the durability of wood blocks for paving, irrespective of whether they are creosoted and of whatever timber they may be, claim that it would be a comparatively easy matter for the manufacturers of brick pavers to controvert the claims that are made in favor of wood blocks.

San Antonio's Costly Experience.

Many examples of the lack of durability of wood blocks exist in different towns and cities in the country. San Antonio had a costly experience with wood block paving and is not likely to give much heed to the advocates of that material in the future. The first street paving done in San Antonio was with octagonal blocks, cut from mesquite timber. As is well known, mesquite is close grained and is supposed to be among the most lasting woods and almost impregnable to the effects of water. Notwithstanding its reputation in these respects, however, the block pavements in San Antonio wore out in a remarkably short time. The blocks rotted, and coming loose from their foundation made unsightly and dangerous holes in the streets.

While there is a strong effort now being made by the National Brick Manufacturers' Association to increase the use of brick for paving and other purposes and much good is being accomplished along that line, it is evident, judging from the situation in Texas, that there is need for an enlargement of the campaign to overcome the inroads which the lumber manufacturers are making in the matter of bringing about the adoption of pine blocks for street paving.

ENCAUSTIC TILE SHOWS RAPID GROWTH

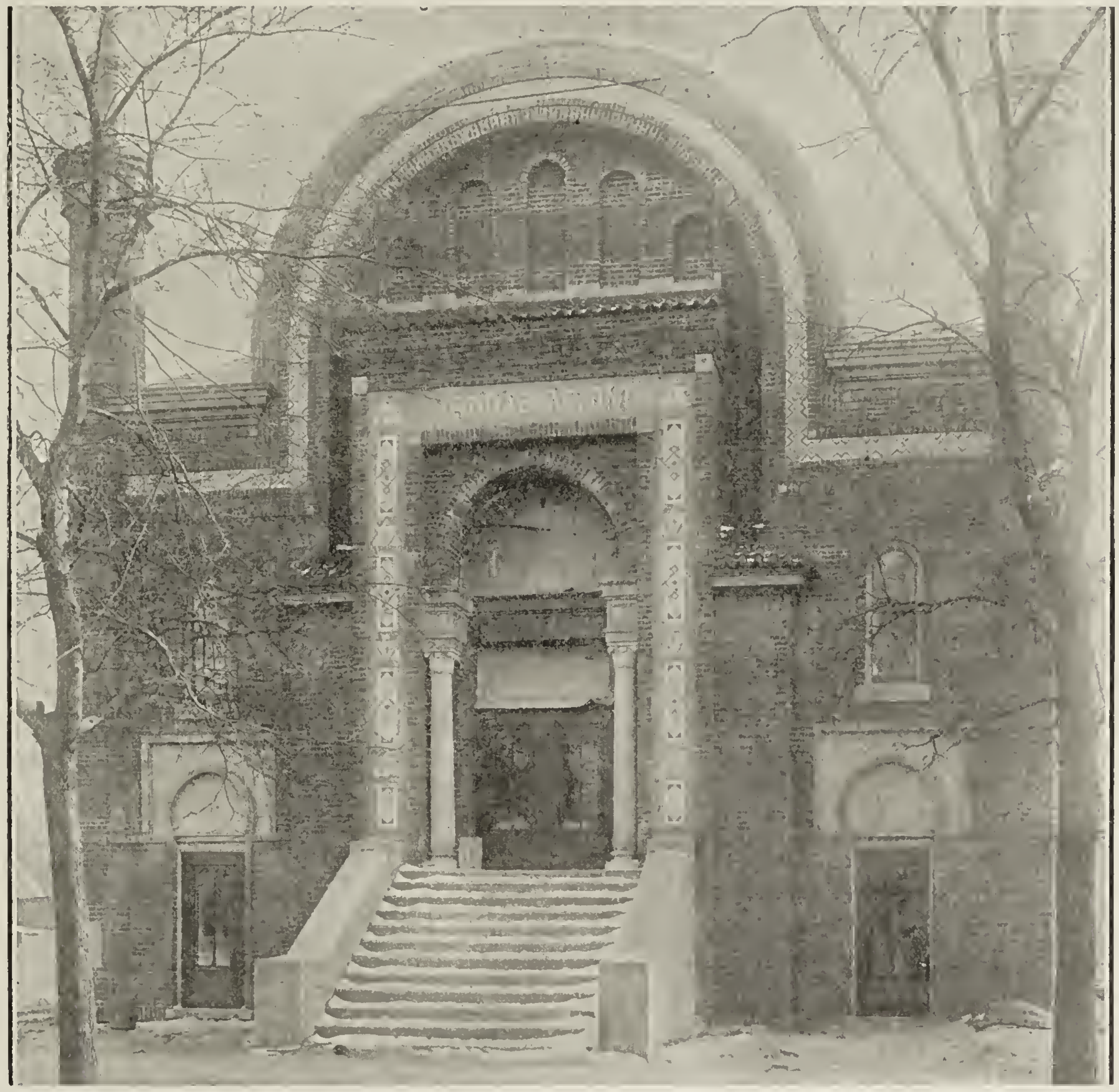
Excellent Example of Tile for Exterior and Interior Purposes are Shown in Jewish Temple at Peoria, Ill.

DURING the past ten or fifteen years great progress has been made in the use of tile, says the "Mantel, Tile and Grate Monthly," and its increased use for exterior and interior purposes has brought architects to realize that any decoration or color scheme can now be worked out successfully in tile. To illustrate this point, several reproductions of tile work are shown herewith.

The tile work in the Jewish Temple at Peoria, Ill., as recently described in the "Mantel, Tile and Grate Monthly," is an excellent illustration of the varied uses of this material in bringing about attractive results. "The entrance to the temple and the Hebrew inscription over the chancel are of cut ceramic of glaze and mat finish, the tile being furnished by the United States Encaustic Tile Works, Indianapolis, Ind.

"Another illustration of the use of tile for practical interior and exterior purposes is shown in the construction of the new Palace Restaurant at Peoria, Ill. The exterior of the restaurant is of marble and cut mosaic with enamel glaze. The wainscoating is the most striking feature of the interior of the restaurant. This is carried out in the autumn leaf glaze of the United States Encaustic Tile Works and in order to obtain a variation of shades for this piece of work, the tile in question were selected from four different kilns, so that the wainscoting is not a solid color, but is made up of various shades mixed indiscriminately and the effect of setting the tile in this manner has produced effects in shades and colors which are not only attractive but have far exceeded the expectations of the architects as well as the tile contractors. In fact, many persons visit the restaurant for the sole purpose of examining the beautiful tile decorations." There is a strong tendency among architects to depart from the use of matched shades and colors and to use instead a wide variation of colors to bring about the artistic effect which has been striven for so many years.

The extensive use of tile for decorative features, during the past seven or eight years, is conclusive evidence that its use in the future will be much increased.



Jewish Temple, Peoria, Ill. Hebrew Inscriptions Over Doorway and Decorative Features are Executed in Tile Furnished by the U. S. Encaustic Tile Works, Indianapolis, Ind.

BULK OF COAL SUPPLIED BY FOUR STATES.

Pennsylvania, Illinois, West Virginia and Ohio Rank High in Production of Coal as Well as Clay.

Since the coal industry is so closely allied to the manufacture of clay products it is of interest to note that from 1814, the date of the earliest record of coal production in this country, to 1911, inclusive, according to a chart just issued by the United States Geological Survey, Pennsylvania has furnished 2,270,798,737 short tons of anthracite coal and 2,396,491,260 short tons of bituminous coal, a total of 4,667,289,997 short tons. The greatest output of anthracite coal from this state was in 1911 when 90,464,067 short tons were mined; the record production of bituminous coal was in 1910, when the yield was 150,521,526 short tons.

Illinois ranks second in the production of coal during the period from 1814 to 1911, with 844,012,353 short tons of bituminous coal; West Virginia third, with 649,448,201 short tons; and Ohio fourth, with 611,949,292 short tons. None of the other states has produced as much as 500,000,000 short tons during the period. These four states have therefore produced during the 98-year period 6,772,699,843 short tons of coal.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. NOVEMBER 1, 1912 No. 9

BEAT YOU TO IT, AS USUAL.

He beat you to it, as usual, didn't he?

The wood block paving man and ALL his first cousins—the cypress man, the white pine man, the cedar shingle man, the regular building lumber man and the others, stole a march on you, didn't they?

Confess up—honor bright—you've let all this hullabaloo about organization work pass into one ear and out the other? You've never given the subject SERIOUS thought, have you? Perhaps you've not even CONSIDERED it?

Well, Mr. Clay Manufacturer, there IS something to this organization business and the $7,000,000 crimp put into you last year by the lumber men, only partially organized as they were, and the cement men, shows WHICH way the wind is blowing.

And the crimp NEXT year is going to be WORSE than that, Mr. Clay Manufacturer, if you don't GET A HUSTLE on yourself and DO something.

You are UP AGAINST IT, Mr. Man. A great big problem confronts you and you no longer can sit by the road side and watch the procession go by. You've got to GET INTO the procession yourself.

There is a bumper crop this year. The corn bins, the oat bins and the wheat bins of the nation are groaning under their extra heavy load this Fall.

There never was a more promising season among the industrial and commercial industries than the present one.

Prosperity seems to be EVERYWHERE in sight, and that means there will be more building the next twelve months than there has been in the history of the country.

Perhaps YOU will feel SOME of this prosperity. It may come to you, whether you STRIVE for it and DESERVE it or not, but you won't get what is YOUR SHARE by a long shot the way you are drifting now.

The Government's census report, recently issued, says your output last year was more than $7,000,000 less than it was the year before.

Next year this decrease will be even greater at the present rate of INACTIVITY on YOUR part and ACTIVITY on the part of your FOES.

Elsewhere in this publication, the announcement is made that the entire lumber and wood interests of the country have organized.

And the news is RECENT news, too, because the entire campaign for organization was PLANNED and EXECUTED within THE LAST FEW WEEKS —long after the opening gun was fired in the campaign started by this journal to arouse you fellows to the importance of a similar step.

See the difference? It doesn't take your foe long to MAKE UP HIS MIND what to do. He hears of a good thing and he ADOPTS it.

What do you do? YOU have got to PONDER. YOU have got, first, to figure out all the ifs and the ands, and, after you have done this and you have PARTIALLY satisfied yourself that perhaps the thing may work out all right you begin to PRY AROUND to see if your fellow clayworkers haven't got something up their sleeves for you.

The time for dilly-dallying is past. The cement men have been organized for some time.

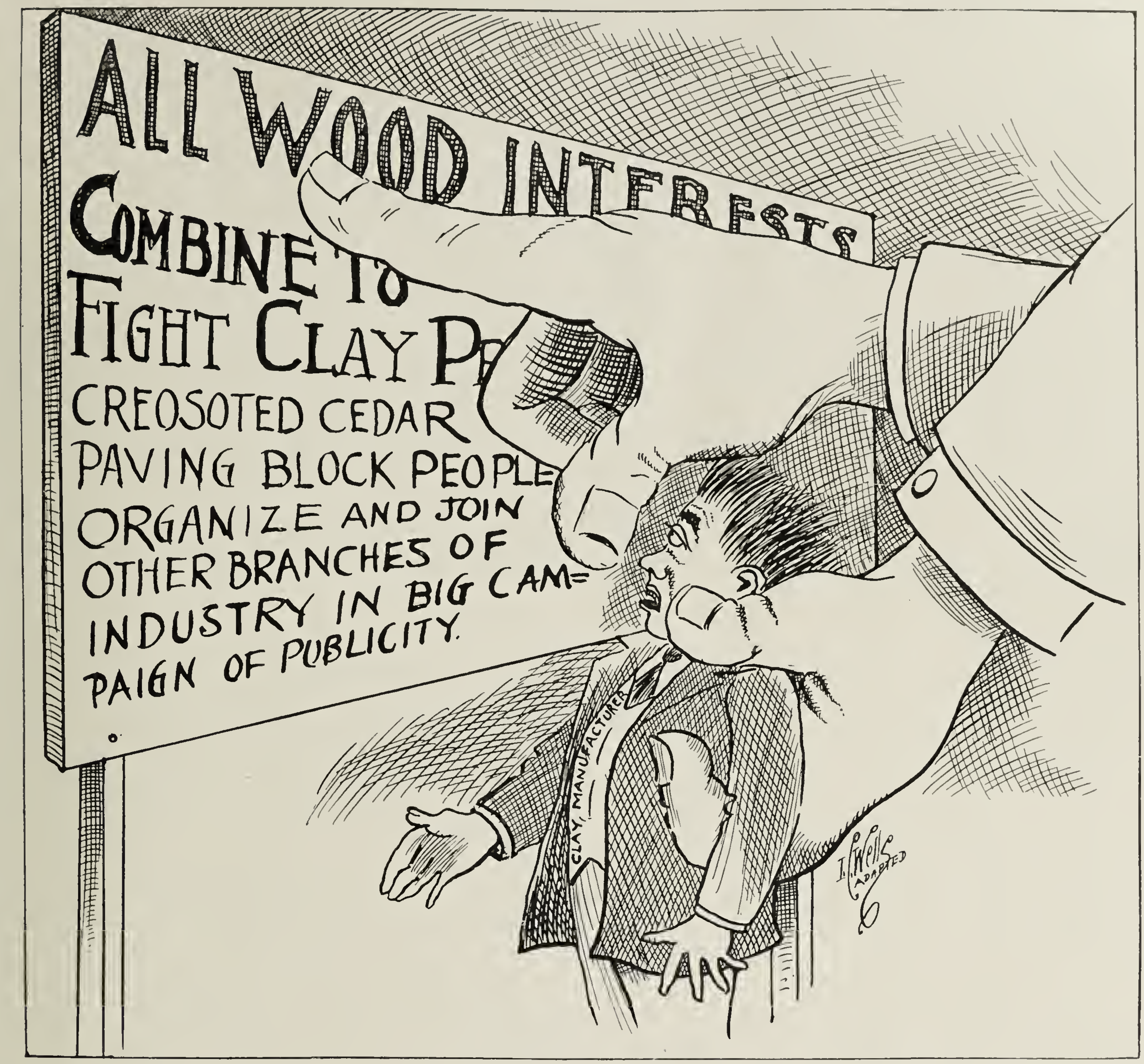
The lumber man—already organized to some extent, but now, to-day, thoroughly organized, is READY for the battle. He has launched plans for publicity work that will run up into six figures, and he, too, is a dangerous foe.

Before MANY weeks you will see every bill board and fence corner, every popular magazine and all the other suitable media, ALIVE with good arguments for the use of WOOD in construction work.

And all this noise about lumber and about wood paving blocks is going to have its effect. The building public will be LURED by the attractive advertising. And EVERY HOUSE and EVERY BUILDING the lumber man gets means ONE LESS for you to make the material for.

Can't you see the necessity of getting together, Mr. Clay Manufacturer? Don't you REALIZE it is

SEE, HE BEAT YOU TO IT, AS USUAL


ALL WOOD INTERESTS COMBINE TO FIGHT CLAY P
CREOSOTED CEDAR PAVING BLOCK PEOPLE ORGANIZE AND JOIN OTHER BRANCHES OF INDUSTRY IN BIG CAM=PAIGN OF PUBLICITY.
CLAY MANUFACTURER
I. Wells ADAPTED

up to you to **ACT** and **TODAY** is the time?

Organization is a simple thing. **BEGIN IT AT HOME.** Start out to-day. Go to every clay product manufacturer in your home town and urge him to join a local association. Get up a simple set of by-laws. If you don't feel like going to all that trouble write to "Brick and Clay Record" and a sample set will be sent you free of charge.

When you have organized, inquire whether the clay men of your adjoining towns have organized. If they have, see that all of you **GET TOGETHER** and form a state association if you have not already formed one.

Then join some **NATIONAL** body—the one that fits the special branch of the clay industry you represent. And don't let up there. Keep everlastingly at it. Then, Mr. Clay Manufacturer, you will turn the fortunes of war your way.

WAR AGINST CEMENT.

A letter recently received states: "We congratulate you on the fight you are waging against cement."

This journal is **NOT WAGING WAR AGAINST CEMENT.**

What this journal **IS** doing is waging war against the **MISUSE** of cement.

Cement, **PROPERLY** used and in the **RIGHT** place, is a most excellent material. There is no gainsaying this.

But cement **IMPROPERLY** used and in the **WRONG** place is a **MENACE** and should be discouraged.

Take cement and use it in **MORTAR** for brick construction, using the BEST cement that is to be had, free from adulterants, it is in the RIGHT place and is PROPERLY used.

Use it for FLOORINGS in factory buildings, in concrete mixtures, it is PROPERLY used and is in the RIGHT place.

Use it in DAM CONSTRUCTION, where there is no alkali or other destructive elements in the water, it is PROPERLY used and in the RIGHT place.

Use it for a FOUNDATION in street paving, if mixed in the correct proportions, it is PROPERLY used and is in the RIGHT place.

Use it in SIDEWALK construction it is PROPERLY used and in the RIGHT place.

And when you have named THESE usages you have about EXHAUSTED the places where and the purposes for which cement CAN be used with any degree of safety or economy.

Cement should not be used in building construction work, either in the lofty sky scraper or the residence.

And there is NO place in ANY building or construction work where it SHOULD be used or CAN be used ADVANTAGEOUSLY, with SAFETY or ECONOMY, if CLAY PRODUCTS CAN BE SUBSTITUTED therefor.

Cement SHOULD NOT be used in farm drainage or in sewer construction, because the action of the alkali in the water renders it USELESS in a short time in the one and the action of the chemicals in the sewage DESTROYS it in the other.

Whenever cement is used in ANY of these places mentioned it PROVES DISAPPOINTING.

Leading architects realize this and already many have CEASED to specify concrete for lofty skyscraper construction other than in cassion work.

For a time concrete was used for floorings ABOVE the ground floor but hollow tile largely has superceded it even there, and today it is a RARE thing to see anything else used.

It is a PASSING FAD just now to use concrete for bungalow buildings. You see it in solid wall construction and you see it as a stucco finish over metal lathes, hollow clay tile or plain weather boarding.

But this is a FAD. Another five years, as soon as the FAILURES begin to show in sufficient numbers, and it WILL BE DROPPED just as concrete was dropped in the construction of the more substantial office and factory buildings.

Sooner or later the cement people themselves will see the mistake of urging their material in impractical places and will turn their attention to its proper usage.

But whether they do or not the buying public will come to an early realization and cement will gradually take its PROPER place in construction work, as a secondary material, leaving BRICK supreme.

TO PAVING BRICKMAKERS

Mr. Paving Brick Manufacturer, if you are NOT a member of the National Paving Brick Manufacturers' Association, you are MAKING a SERIOUS mistake.

The N. P. B. M. A. is an organization that was formed for YOUR benefit and for no one else's.

It is an UNSELFISH organization when it comes to YOU and YOUR products but a most UNCOMPROMISING and a MOST SELFISH body when it comes to FIGHTING YOUR FOES.

There is not a day, nor an hour nor a minute but what this great body of progressive brickmakers is not doing SOMETHING to FURTHER YOUR interests, whether you are an active member of it or not.

There is not an OPPORTUNITY to urge the use of vitrified paving brick this organization does not seize.

There is not a BATTLE that is being waged in YOUR interests but what it is at the FRONT taking the lead.

The N. P. B. M. A. is a great fighting force for vitrified paving brick and it DESERVES YOUR SUPPORT. If you are NOT a member of this organization it is YOUR DUTY to become one at once.

While you are deriving benefits from the work it is doing, notwithstanding the fact that you are NOT a member, you are ACCEPTING the same at the EXPENSE of OTHERS who have CONTRIBUTED to a general fund.

Suppose you were a fisherman. Suppose in your home town you and half a dozen other fishermen formed a little club and erected a comfortable clubhouse on the banks of a good fishing stream.

Then suppose that, after you had asked all other fishermen in your town to join your club and they had refused, you and your friends went out to enjoy a week's outing.

Suppose, after you had been enjoying the good sport that your little club had made possible two or three of the same fellows that refused to join in with you came out with fishing tackle and settled down to enjoy the comforts of your clubhouse.

Wouldn't you remonstrate? Wouldn't you say to those fellows: ''WE asked you to join in with us but you refused. You've got your nerve coming out here like this?''

Suppose then, that these intruders would answer: ''Yes, but we like to fish and you've got good fishing here.''

Would that make it RIGHT?

Well, your relationship to the N. P. B. M. A. is the same as that of the intruding fishermen at that fishing club of yours. You are getting the benefits of an organization without contributing one cent towards it.

NEW BOSTON HOTEL IN WHICH CLAY PRODUCTS FIGURE

Hotel Copley-Plaza, New York City.—A splendid Renaissance pile, faced with gray brick, made by the New England Brick Co., with terra cotta trimmings, executed by the Architectural Terra Cotta Co., of New York. This building takes a prominent place in the architectural group, formed by Richardson's Trinity Church and New York's famous Library Building.

HOW SELLING EFFICIENCY MAY BE ENCOURAGED

(Continued from page 334.)

strong that it was the high grade brick that E. N. Terprise sold.

Then the salesmanager bought a hundred or more copies of this issue and clipped out the page and sent it to all his architect and contractor friends, not only in the city where he did business, but in outlying territories.

The next thing the salesmanager did was to sit down and write personal letters via the multigraph, to every builder, architect, contractor and prospective builder, announcing that his firm was prepared to give prompt delivery service, good quality brick and honest count at right prices.

Then Mr. Salesmanager, about Christmas time, got out some attractive little inkwells, representing a motor truck, the tonneau holding the ink and the radiator acting as a penwiper, and sent them around to his new and old customers.

The business of E. N. Terprise took on larger proportions, but his over head charges did not necessarily increase. His automobile trucks could make three deliveries to one made by his competitor's horse drawn trucks. His dictaphone merely worked a little more uniformly taking care of his correspondence, his bookkeeper did not have time to sit around and read the political news in the papers like old Sam Timmins over in Deadun's office and his salesmen did not come in at 2:30 after having been on the job since 11 A. M., with an hour off for dinner, like those in his competitor's office, because they were busy chasing up new leads that were provided by a report system, that cost considerable money, but which had been found to pay for itself. Deadun had discontinued the service several years ago when the E. N. Terprise business was just an infant in swaddling clothes, because it cost a thousand dollars a year and all the business they ever got from it proved to be bad accounts.

By and bye some of the salesmen from the other offices began to drift into the E. N. Terprise office hinting around that they would like to make a change. Some of these salesmen were those with whom E. N. T. used to work with for the very same Deadun & Co. Some were taken on but their engagement was on a basis of efficiency, not friendship. Some made good, but some didn't. When a salesman gets to a certain point in his life in which he has run along in a groove, constantly growing deeper, it is practically impossible for him to change and adjust himself to new systems. That is why Billy Todd never made good, although he had formerly been a close friend and companion of E. N. Terprise. In that office, results, not friendship, counted.

Unproductive Salesmen Must Go.

E. N. used to say that the deadliest thing in the world was a social leach. He put that into his business.. Like Napoleon, he believed that it was a mistake to be kind to a weak brother until after you had been severe. That was E. N. T. through and through. He was kind enough afterward, but he certainly swung the iron ball around his office when somebody fell down on a job. He was just as likely to invite the whole sales force out to dinner a few nights later, or he'd help one of his salesmen through, financially, until the baby got well or Mrs. Salesman got out of the hospital after the operation. But the social leech, in the form of an unproductive salesman had to make way for his antithesis, but not until E. N. T. had found him another job, providing his record was good.

A salesman with a good record had to be absolutely on the job. He was expected to keep a list of prospective builders, architects, whether live wires or intermittents, a list of contractors, "actives," or "has beens," and he was expected to follow up every lead handed him from the report service and give a good reason why the job was not secured, if he did not happen to land it.

By and bye the manufacturer began to feel as some manufacturers frequently do when they have established good distributing connections, that E. N. T. could not get along without his brick, in fact there was no plant anywhere around that turned out as good brick as he did. He began to convince himself that he could easily cut down on some of his expenses and take a little bigger profit.

The distributing end and particularly the salesmen soon noticed that something had put a crimp in the quality of the brick coming in. They told E. N. T. about it, but he had already noticed it. His yard foreman had brought him in some samples. The producer got a stiff letter and he replied in a rather indifferent, independent tone that he was sorry but that, owing to this, that and the other thing he could not help it if his brick did not come up to the standard. He was told in a polite, but firm way that the brick had to stand at the former fixed quality. He sent back the same unsatisfactory reply again. The morning E. N. Terprise decided to make his brick himself. Then, "by George," he'd be sure to keep up his quality.

He had to keep on taking brick from the old firm, but when the old firm heard he was putting up a plant of his own the brick began to be late in arriving and were off color and soft.

During these times, E. N. T. lost money heavily. He had built up his business, on a quality slogan, and he was determined to stand behind his promises. He saw his profits wiped out in freight rates from distant plants, but he delivered the same quality of brick to his old and new customers.

New Plant A Winner.

That plant that E. N. Terprise put up was a winner. He had gone one day with his lodge to a clam bake and discovered a clay bank. There is where he built his plant. He put in electrical equipment throughout. Where his competitors used carts and horses, he used electric locomotives. He burned his brick in modern kilns and handled them by portable conveyors. He loaded to barge and car by the crate load of 750 each and these, fitting onto his automobile trucks in the city, cut down the cost of handling to a mere nominal sum. His brick were delivered unbroken, and in usable condition, thus saving waste on bats and discards.

Soon he began to ship not only to his own territory, but to towns and cities in a neighboring state. Other brick distributors found themselves cramped. The E. N. Terprise Company had the cream of the salesforce. It operated upon a modern, up-to-the-minute principle. The other distributors were worried to supply the same quality of brick that the E. N. T. company could supply and still keep the price down. New business constantly came in and the automobile trucks were to be seen everywhere, either carrying material or returning for other deliveries.

Consumers of brick began to wonder about that time why they were compelled to buy brick of the E. N. T. concern. They realized that they got better quality there, but they disliked the idea of being forced to buy of one man or one interest. They began to imagine the woeful things he might have the power of doing if he succeeded in getting the monopoly of the brick business. "Why," his competitors exclaimed, "he could fix any price he wanted to." Some users, stirred up by the jealous, "back-namber" dealers, thought he could fix prices abritrarily, even then.

So they plotted and fixed up a bill of complaint and sent it to Uncle Sam at Washington and prayed, petitioned, etc., for relief. E. N. T. may or may not be guilty of violating the Sherman Anti-Trust law, a question which would have to be decided by a microscopic survey of the whole situation.

"The people" at once began to investigate through their regularly appointed authority and in the meantime E. N. T. went right ahead making high quality brick and selling them to those who wanted none but good brick. His worst offense was to refuse to sell to the "shoestring builder" or the "shoestring dealer," both irresponsible parties who busy themselves working out plans for getting unlimited credit on insignificant capital and then decamp, leaving the dealer and the manufacturer both high and dry, with experience their one and only comforter.

Building Code Omits Brick.

When they began to tinker with the building code, the city authorities accidently omitted to insert the word "Brick" into the specifications for footings, but remembered to provide for concrete and concrete blocks for this important part in building construction. E. N. T. discovered the omission, and gave it such publicity through his regular advertising space that the omission was subsequently corrected by an apologetic group of city fathers, after the daily papers had taken up the fight.

"He was only feathering his own nest," was the measure of thanks bestowed upon him by an admiring and appreciative host of manufacturing and distributing business friends, but this alert sales organization, working on the efficiency basis, and bearing in mind the general efficiency of a building upon which the populace of any city must depend for safety of life and limb, discovered what those same affectionate business friends might and probably would have entirely ignored until it was too late.

If "E. F. C. N. C. Y." brick is standard in the field that E. N. Terprise covers with his products and efficient sales force today, it is not because he waited for opportunity in the form of some misfortune to a business rival or a manufacturer, to come to him. It is because he made his own OPPORTUNITY by putting EFFICIENCY into the most commonplace of all commonplace businesses; the sale of common brick.

Keep Up with the Procession.

No clay man can hope to be successful who does not keep himself thoroughly posted on all that is latest in connection with his business. Everything that pertains to the industry should be of vital interest to him and in no way can he keep in touch with what is going on so well as by carefully reading a good live trade journal. In any issue of "Brick and Clay Record" may be found articles of value which have an important bearing on the industry. These articles, carefully prepared by experts, who have spent years in the study of clays, contain dependable information of practical value to the operator of a clay plant, and are worth keeping for future reference.

Are your factory buildings constructed of brick? Do you live in a brick house? If not, you canont well blame your neighbor, if he decides to build his new home and business building of lumber or concrete.

Remember the steam that blows the whistle is not that which makes the brick.

ABILITY TO HANDLE MEN.

Successful Superintendent Must Know When and Where to Use Cheap Help to Secure Best Results.

Success in clay manufacturing often depends as much on the ability of the superintendent to handle his workmen to the best advantage—as it does upon a knowledge of the handling of clays. When it comes to employing men and directing their efforts so as to produce good ware successfully, with a reasonable profit, he must obtain the best men available for the different kinds of work and know how to secure the best results from them. A writer who has given much thought to the subject says: "We hear much in these days of what is called 'good team work,' which is a splendid idea provided the superintendent grasps the proper conception of it. One view is that it means inspiring each individual making up the working crew with a desire to help not only himself but his fellow workmen, so that the crew or team may make a good showing. Another view is that it means to beget pride or enthusiasm in the men. This is good, but it does not go far enough. A foreman might have the most enthusiastic team in the world, but if the men were not properly distributed over the work so that the peculiar fitness or qualification each possessed be brought into play, the men would not produce the best results.

"Good foremanship consists in large measure in being able to determine clearly the qualifications of each man for a given kind of work and then to round out and distribute the crew so that the best men will be doing the work for which they are best adapted. In order to obtain good work from his men, a foreman should first figure out just how much there is of each kind of work to do and divide and distribute his crew accordingly. Obviously he cannot always do this to perfection because there is not always just the proper kind of a man standing around waiting for the job, but to a certain extent he can exercise judgment in these things and by this means obtain better results with more profit and with less worry than to go at it blindly, depending on force and enterprise alone.

Some Good Suggestions.

"From studying the different traits of certain well-known and successful contractors one is able to pick up valuable suggestions. A contracting firm which became famous the country over illustrates this point. It had methods that seemed peculiar and begot a certain amount of criticism. For example, if it had a job requiring 10 good carpenters it would advertise for 100 and if the hundred came the firm would probably try out the entire number, say 10 each day, giving every man a fair chance long enough to demonstrate his ability. Then only the very best were kept and given steady employment. The men thus selected were paid the highest wages of any in their calling. In return, the firm was not only able to conduct a profitable business, but established a world-wide reputation and was often called upon when some very difficult work was to be undertaken and finished within a limited time." It would be rather hard on the average man, as well as on the slower men in the trade, if all building firms pursued these methods, yet the suggestion is worthy of consideration.

There are many kinds of work about the clay plant calling for only a fair degree of skill. Here men can be used who have no special training, are steady and reliable, but of course would not command the same rate of wages as the man of higher skill.

Expensive Man Often Cheapest.

It is often figured that it is just as cheap to put a good man at any work and pay him good money as it is to use indifferent men at lower wages. While this may frequently be true it is not always the case. It takes, however, a discerning foreman to understand just when and where to employ a cheap man and when an experienced one. There have been instances where certain work about a place has actually cost more money by engaging cheap men to do the work than would have been the case had a more skillful one drawing more money been put on the job, because he would do the work in much less time and in a much more satisfactory manner.

There is, however, a difference in cheap men. There are some who are quick but rough—men who will make time on a rough job, but are not satisfactory in doing particular work such as making corners, requiring the exercise of care and skill. All of which goes to prove that success in business consists largely in knowing how to handle and place men as well as in knowing how to do the actual work. Therefore, either the builder, or the successful superintendent, must understand these qualifications for selecting and handling men or he should have with him in charge of the work a foreman possessing these qualifications to the end that the greatest measure of success may result.

SUBSTITUTION OF GREASE FOR OIL.

Considerable Saving Might be Effected by Using Grease Instead of Oil in Many Cases.

While grease can by no means be regarded as a universal substitute for oil, it might be used in many instances effecting a considerable saving, and those who have made a study of the matter prophesy that in a few years grease will largely take the place of the expensive lubricating oils now so generally used.

Care must, of course, be taken that the grease is actually used, that is to say it must really lubricate the parts of the machinery to which it is intended to be applied, and this may mean some slight alterations in the channels, etc., used to convey the lubricant.

Grease, however, may not always be substituted for oil; the latter is essential in some parts of machinery. Where, however, the grease can be used, it will generally be found to be cheaper, more efficient, and to need far less attention. Other minor advantages are the reduced risk of accident to the "man with the oil can," and far smaller liability of damage.

In principle, of course, the use of oil and grease is the same—to provide a film of suitable material between the two metallic surfaces of metal. Under pressure and warmth the grease liquifies to some extent, and so becomes oil, but it stays in its place better than an oil which is supplied in the liquid state.

CAUSE OF POOR BURNS.

Some Good Suggestions Offered to New Jersey Brickmaker to Remedy Burning Troubles.

Editor Superintendents' Department: For the past two years we have had an almost uniform run of poor burns. We have had a couple of burners from the Haverstraw district, who were considered among the best. Our clay is dredged out of meadow land and it is wet when it comes out and is allowed to dry almost two months. The deposit consists of a very fine strata of clay and very fine sand. The brick, when they come out right, are of excellent quality, being hard and strong, with a good ring. We mix coal dust with our clay, using four-fifths of a bushel to one thousand brick.

Our burns are made in scoved kilns, the same as those used at Haverstraw. We dry the brick about 30 to 35 hours before heating up the kiln. We burn under the steam. Our difficulty seems to be that the heat is not evenly distributed through the kiln and we have hard brick in places, often "swelled" brick, and there are also pockets of pale brick in the same arch. Our kiln ground is 35 feet wide and we usually burn 16 to 20 arches.

We would be glad if you could give us some advice and help in the matter, or at least put us in touch with the proper parties. The Western brickmakers and brickyard engineers do not often use the Eastern methods and very few of them know anything about burning with scoved kilns, or the use of coal dust.

Ellis Lovejoy, E. M., offers the following explanation of the trouble:

Relative to the trouble the New Jersey party has in burning common brick in scoved kilns, the feature of the Eastern burning in such kilns which differs from the Western practice is "burning under the steam." The use of coal dust in the clay and burning in scoved kilns is not confined to the East.

Burning under the steam is Hudson river practice, and good practice, too, for that material, but it is not adaptable to Western clays as a rule, and it may or may not be adaptable to the New Jersey material in question.

The unequal heat distribution may be due to bad setting, but it is more likely to be due to wet brick or to insufficient drying.

The clay may not give up its moisture as readily as the Hudson river clay and in advancing the fires to follow up the steam, there may be many parts of the kiln not ready for this advance. If the swelled brick are "black cored," the swelling is due to carbon in the clay, probably to coal dust, and the trouble is influenced by the moisture. So long as any moisture remains in the brick—a pocket or batch, let us say—the temperature in this spot is kept down by the moisture which absorbs the heat. This spot lags behind until the moisture is evaporated, and then, being surrounded by hotter brick, the advance in temperature is too rapid for complete oxidation and bloating results.

"Soft pockets" in the arches may also be due to insufficient and irregular drying. They are cold and the heat draws to the hotter areas on either side. All burners are familiar with the difficulty of working out a cold spot.

In conclusion, the trouble may be due to differences in the clay mass; to irregular drying which may be traceable to clay differences rather than to time of drying; to irregular setting or perhaps to a method of setting not the best for the material; and finally it may be due to following the Hudson river practice, which may not be adaptable to the material in question.

AMONG THE SUPERINTENDENTS.

James Parks, for twenty years superintendent at the plant of the Streator Clay Manufacturing Co., at Streator, Ill., who resigned to accept a similar position in Hopkins, Minnesota, was presented with a gold watch by the employes of the Streator Company.

William Downey has resigned his position as superintendent of the Murphysboro Paving Brick Co. at Murphysboro, Ill., to accept a similar position at Dayton, Ohio.

INTERESTING LEGAL DECISIONS.

Employers Responsible for Agent's Acts—Liability of Carrier Terminates Only With Delivery of Goods.

Liabilities of Carriers; When Terminated, and Duties of Consignees.—The law imposes upon a common carrier of goods the duty, the Supreme Court of Arkansas says, in Arkadelphia, etc., Co. vs. Company, 139 Southwestern Reporter, 680, not only to carry the goods safely, but it makes it also responsible for the proper delivery thereof at the point of destination, and makes it during the course of transportation an insurer of the goods against loss from any cause, with certain exceptions. This extraordinary liability as an insurer of the goods continues until the carrier makes proper delivery thereof at the point of destination. The liability of the common carrier ceases with delivery of the goods at the point of destination according to directions of the shipper, or according to the usage and custom of the trade at such place of destination. This delivery may be actual, or it may be constructive; and in either case the liability of the carrier terminates with such delivery. An actual delivery of the goods is made when the possession is turned over to the consignee, or his duly authorized agent, and a reasonable time has been given him in which to remove the goods. When such delivery is thus made, the carrier is fully discharged from further liability. To constitute constructive delivery, the carrier must give notice to the consignee, or his duly authorized agent, if that is at all practicable, of the arrival of the goods, and must also give a reasonable opportunity and time thereafter for the consignee or his agent to remove same. When that is done, the liability of the carrier is terminated, whatever its liability may otherwise be. Moreover, this extraordinary liability which the law imposes upon a common carrier as an insurer of the goods cannot be continued at the option of or to suit the convenience of the consignee or his agent. The duty to take and receive is as imperative upon the consignee and his agent as it is upon the carrier to deliver. It is the duty of the consignee to act promptly in taking and removing the goods, after due notice. And if he fails to do so, whatever duty may rest upon the carrier in relation to the goods thereafter, its liability as an insurer thereof is by such failure terminated. It is the duty of the consignee to be on hand and to receive the goods after due notice, and it is his duty to be in a position upon the arrival of the goods to receive notice thereof, and to act promptly in taking and removing them.

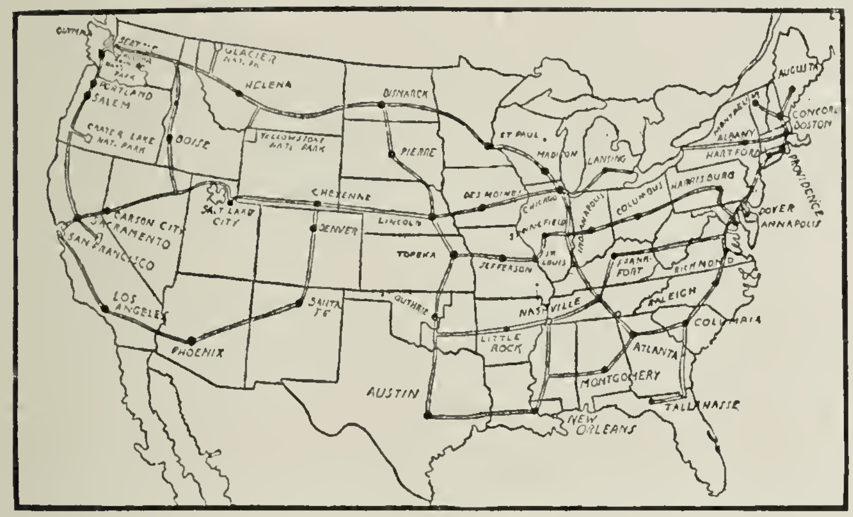
Damages for Unfair Competition in Use of Trade Marks.—Where unfair competition consists in the use of a trade mark in fraud of the complainant's rights, affixed to or covering articles or packages sold by the defendant, the United States Circuit Court of Appeals, Third Circuit, holds, in J. F. Rowley Co. vs. Rowley, 193 Federal Reporter, 390, the complainant is entitled, by way of damages and compensation for the wrong inflicted upon him, to the whole profits realized by the defendant from the sale of articles under color of the infringing trade mark.

Unread Contracts.—In the absence of misrepresentation, fraud, or deceit, the Supreme Court of Alabama holds, in Lester vs. Walker, 55 Southern Reporter, 619, the execution of an instrument by one who can read and write is binding upon him, even though he did not read it, or was ignorant of its contents.

ROAD TO LINK ALL CAPITALS.

National Highway Proposed—Plans for Raising Funds by Tax on Tobacco.

Congressman Warburton of Washington is to introduce a bill at the next session of congress which provides for the creation of a national military highway, connecting the capital of every state in the union with the nation's capital. He proposes roads from Maine to Florida, with a number of intersecting roads in the east—one along the gulf at Texas—another to Chicago and Topeka—the Chicago road to run by the twin cities, Fargo, Bismarck and on to the coast. There are to be several roads up and down the Pacific coast—with various intersecting lines.



Proposed National Highway to Link Together All State Capitals.

The cost of these roads is estimated at from $20,000 to $25,000 per mile. For the first, the money could be raised in four years, the latter would take about five. It is proposed to make the roads sixteen feet wide with a concrete base, hard surface of either asphalt or vitrified brick. It is also planned to have as easy grades as possible.

Think of the loads the farmers could haul to market over such roadways! Think how quickly they could drive to town on such highways! Think of the joys of bicycling, motorcycling and autoing over thousands of miles of such roads!

The congressman proposes eventually to connect every state capital with these roads at the expense of the national government, leaving the routes to be decided by the different states—but with the general purpose of making the roads as direct as is convenient.

The most unique thing about Congressman Warburton's plan is the manner in which he expects to raise the funds for this great work. He is planning to make the tobacco users foot the bill. They must pay more for their luxury. He proposes to restore the original internal revenue tax paid in 1879—and in this way raise about $80,000,000 annually.

The increase in the internal revenue to the figures of the era mentioned by the congressman would create the fund all right. The only people at all likely to protest against his plan are the tobacco users. Their names are legion—but many of them also own autos and wagons and other vehicles. Probably they would not oppose the increased tax—if the money was to be spent for such a laudable purpose as national highways.

There are untold advantages for the road—in addition to its value for travel. One of the benefits would be to greatly increase the value of the land—not only adjoining—but for many miles on either side of each highway.

But the chief value would be the incentive the national highways would be to state and country road building. Every state would have one of these roads. This would cause each commonwealth to take more interest in its own road construction. Every county would show more enthusiasm. Every community adjacent to the national roads would want fine connecting lines and these would be extended indefinitely.

Every clayworker in the country should use his influence with congressmen and senators from their respective states to secure their support to Congressman Warburton's good road bill.

PAVING ASSOCIATION WINS HARD FIGHT.

Secures 11,000 Cubic Yards at Pine Bluff, Ark., Where Unusual Conditions Existed.

Vitrified paving brick won a signal victory at Pine Bluff, Ark., under adverse circumstances, when in the new public improvement work, which is being undertaken in that city, through the excellent work of the Western Paving Brick Manufacturers' Association, a contract for 11,000 square yards of brick was secured.

The property owners on two or three of the prominent streets of Pine Bluff recently determined to put in some sort of paving. Secretary Thurston, of the Western Paving Brick Manufacturers' Association, sent one of his representatives, Monroe Wright, to explain the advantages of vitrified paving brick. Mr. Wright found agents of all the other forms of paving already on the scene. After several conferences with the members of the board of local improvements, city officials and property owners, it was decided to use paving brick exclusively. The asphalt, concrete, bitulithic and other paving material agents retired from the field and preparations were made to let the contracts.

When the bids were opened it was found that the lowest bid was $10,000 more than the legal assessment. This condition was caused by excessive freight rates on the brick, as the material had to be shipped in from Kansas. The freight on the brick alone was more than the actual cost of the brick.

Unusual Predicament.

Pine Bluff found itself in rather an unusual predicament. The property owners wanted brick and voted to use it, but were unable to do so because of its cost. At the suggestion of City Engineer Allen, a committee headed by Mr. Allen, went to Chicago to investigate paving material as used in that city. It was then decided to go ahead and lay a good concrete foundation, the same as required under the specifications for No. 1 paving, and then use a cheaper surface than brick with the idea, at a later date, of substituting brick.

"You see," said Mr. Allen to a representative of "Brick and Clay Record" during his Chicago visit, "we figure that whatever material we use as a surface, will wear out within three or four years, and as the law will permit us at the expiration of five years to levy additional assessment, we can then go ahead and take up the bitulithic paving and put in brick blocks."

The members of the committee, in discussing the situation with the "Brick and Clay Record" representative, were unanimous in a desire to see brick used. Two of the members, being the largest property owners on the streets to be improved, even went so far as to agree to double their assessments voluntarily, to get the more durable and satisfactory brick pavement. However, they said that they were unable to get a sufficient number of property owners to look at the matter in this same broad-minded spirit, and were very much afraid that they would have to give up brick.

The committee returned to Pine Bluff and made its report, and preparations were made to put on a bitulithic top. Secretary Thurston, however, was not contented with this turn of affairs, and began an aggressive campaign among property owners along the streets to be improved. He obtained enough signers to an agreement to guarantee brick paving to the amount of 11,000 square yards, these property owners making up the difference between the assessment and the required contractor's price, by voluntary contributions.

The question of freight rates has been a great drawback to brick in many sections where there are no local plants to supply the demand. The Pine Bluff incident certainly indicates the need of a paving brick plant in that vicinity. Pine Bluff is not the only city that is taking up the "good street" movement in that territory and this should be a most excellent field for an energetic brick manufacturer.

NEWS IN PAVING CIRCLES.

In the plans for a trans-continental highway across the country, Carl G. Fisher, father of the project, proposes that every telephone pole along the route be plugged so as to enable any motorist to telephone to a repair shop or hospital. It is also proposed to place sign boards along the route, placing one sign in honor of every donor of $1,000, such signs to bear the names of the donators. These signs are to be permanent and will be quite expensive.

Plans are under foot for building a brick highway from Puyallup, Wash., to Tacoma, the work to be done by county commissioners.

Thomas W. Hurlburt, city engineer of Portland, Ore., has ordered bevel-edged paving brick used on all streets of that city, having more than a 5 per cent grade.

Dansville, N. Y., has voted to have its Main street paved with brick.

We are advised that the board of public works at Pittsfield, Mass., has awarded the contract for 4,300 yards of brick pavement at an estimated cost of $12,000. Mack brick will be used.

The city council of Mount Vernon, Wash., has decided to pave Main street with brick, as that street has the heaviest city traffic and the council is of the opinion that brick will be the most serviceable and will last longer than any other pavement, which decision met with the approval of the property owners.

GOOD CAUSE BACKED BY MACHINERY MEN.

Recent Good Roads Campaign in Ohio Received Substantial Aid from Brick Machinery Concerns.

It was a strenuous campaign that was waged in Ohio for six weeks prior to the vote on Sept. 3rd on the Good Roads Amendment, and while the battle was lost, that is no indication that the war is by any means ended. In fact, the cause of good roads has been much strengthened by the splendid work done by the National Good Roads Association and its allies, and without doubt the excellent work done will later bear fruit and the movement will result in a great victory for good roads.

In this campaign the paving brick interests were well looked after by leading brick machinery manufacturers, who contributed generously to a fund for the promotion of the good roads cause. The firms donating were as follows:

C. W. Raymond Co.	$200.00
The Bonnot Co.	200.00
E. M. Freese & Co	200.00
J. D. Fate & Co	100.00
H. Brewer & Co	100.00
Chambers Bros. Co	200.00
American Clay Machinery Co	200.00

The funds subscribed by these enterprising machinery manufacturers were handled by a committee, who placed A. C. Jackson, of the National Good Roads Association, at the head of the campaign. Mr. Jackson had only six weeks in which to organize and carry on his campaign, but a great deal of good was done in that time, as was shown by the close vote on the amendment. Meetings were held in all parts of the state and efforts made to enlist the good offices of the women's clubs throughout Ohio. Mrs. Huckins, president of the Women's Club Federation of Ohio, went enthusiastically into the campaign and assisted materially in securing the favorable consideration of Ohio women. In his report Mr. Jackson stated that two hundred and twenty-three thousand five hundred good roads speeches were mailed to newspapers, postmasters, commercial organizations, clergymen, women's clubs and voters in every section of the state.

Over twenty thousand circular letters and hundreds of personal letters were sent out in the progress of the work. Forty-six thousand nine hundred and fifty good roads buttons were distributed, and in addition to the many meetings addressed by Senator Dodge special meetings were held under the auspices of the Women's Clubs in Cleveland, Sandusky and Lima. There were placed two thousand window cards and posters and three hundred cloth automobile banners. Miss Maude E. Jones, secretary of the National Good Roads Association, and Mrs. Murfey, of Chicago, were able assistants to President Jackson in the campaign.

All of this work was made possible largely through the generosity and enterprise of the clay machinery manufacturers and it may be regarded as a permanent investment which will yield large future returns.

The Murphysboro (Ill.) Paving Brick Co. recently received a 400 car order for a paving job in Poplar Bluffs, Missouri.

An order for 100 carloads of brick—the third this year—for use on the Panama canal has been received from the government by the Purington Brick Co.

The Carter Brick Company, of East Peoria, Ill., furnished 450,000 brick for paving Fourth avenue in Peoria. This is said to be the first time in many years that brick from a Peoria plant were used for paving there.

BRIGHT FUTURE FOR SANITARY WARE.

Big Increase in Production for 1911 to be Surpassed in Current Year—New Jersey Ranks First.

During the fiscal year ending June 30, last, there was produced in the United States sanitary pottery valued at $7,031,458, against a production in the fiscal year ending June 30, 1911, of $6,758,996. On top of this it is currently reported by the sanitary pottery manufacturers of the country that the production for the current fiscal year will reach nearly the $8,000,000 mark. In 1901, the production of sanitary pottery totaled only $2,887,650.

The increase in the production of sanitary ware, which consists of lavatories, bathtubs, and other sanitary specialties and appliances for 1911 over 1910 was $272,462 or 4.03 per cent.

New Jersey ranks first in the production of sanitary ware, the production being valued at $4,898,588. West Virginia is second with a valuation of $814,599; Indiana, $549,470; Ohio, $378,779; Pennsylvania, $215,590; all other states, $174,432.

In all, there were 10 states reported as manufacturing sanitary pottery during the last year. There were two less firms in the business than in 1910, and the production totals 20.37 per cent of the total pottery products for the term. This is an increase of 0.37 per cent over 1910.

At a cost of probably more than $250,000, Edwin M. Knowles, president of the E. M. Knowles China Co., of Chester, W. Va., and vice-president of the Knowles, Taylor & Knowles Pottery Co., of East Liverpool, O., together with Thomas B. Anderson, a stockholder in the former plant and general manager of both potteries named, will erect a fifteen-kiln pottery at Newell, W. Va., immediately. Plans are being drawn and ground for the foundations will be broken early in November. It is possible the new plant will be placed in operation by March, 1913.

Both Mr. Knowles and Mr. Anderson will retire from their offices in the Knowles, Taylor & Knowles Co., January 1. Who will succeed them has not been announced. The new plant will have twelve decorating kilns. The building will be 400 or more feet in length and will vary in height from one to three stories.

This plant will be located on a site east of the 32-kiln plant of the Homer Laughlin China Co. and when it is completed, Newell will have a total kiln capacity of 47 kilns, which is greater than the capacity of the five potteries at Sebring, O. Between 400 and 500 people will be employed in the new Knowles plant.

At a meeting of the executive committee of the United States Potters' Association, which was held a few days ago, official announcement was made that the annual meeting of the association this year would be held in the parlors of the Fort Pitt Hotel at Pittsburgh, Pa. No reason was assigned for not holding the meeting at Washington, D. C., as has been the custom in late years. Unless all signs fail, it is probable that Harry D. Wintringer, president of the Steubenville Pottery Co., of Steubenville, O., will be elected president of the association for the next fiscal year.

Although the A. E. Hull Pottery Co., of Crooksville, O., completed a $30,000 addition to its plant during the last summer, the firm now comes forward with the announcement that another kiln will have to be added to its No. 2 pottery.

Two kilns at the plant of the Pennsylvania China Co., at Ford City, Pa., are to be used hereafter for the manufacture of electric porcelain products. The report that the entire plant would be used for electric porcelain manufacture was unfounded. F. H. Patterson will have charge of the new department, while the domestic pottery department will continue under the direction of C. L. Gray.

A NEW WAGE AGREEMENT.

Every sanitary pottery in the United States will, commencing November 1, next, start operations under a new wage agreement, which has just been signed by the officials of the National Brotherhood of Operative Potters and the officials of the Sanitary Potters' Association. Whether or not the new wage scale will mean that the selling lists of sanitary pottery will be revised, remains for the future to tell.

According to the new agreements, the workers have been given a substantial increase in wages. This does not mean that general advances have been made in the making of the various items in the entire sanitary list, but in some main staples advances have been authorized.

In the manufacturing of jets an increase of 10 per cent has been agreed upon, to become effective November 1. On wash-downs an increase of 5 per cent has been authorized. The wages of the packers have been so adjusted that they will now receive $3.50 per diem, or a

A demand for an increase in the price of placing swinging lavatories has been referred to the standing committee of the two factions for final adjustment. The workers have sought an increase, ranging from 4 to 10 per cent.

A complaint was made in the joint conference by the sagger makers, relative to the distance these workers should carry their ware, and the adjustment of this dispute has been referred to a special committee of the sagger makers and the manufacturers, and the proposition will be taken up within the next few weeks.

The joint conference lasted over a week. Just how many propositions or requests the workers put up to the manufacturers has not been announced, although it is admitted that all differences have been adjusted in a satisfactory manner, and that here will be no trouble in the operation of the sanitary potteries. The wage scale which has just been agreed to will be in effect for two years, dating from October 31.

It has been nineteen years since there has been a strike in the pottery trade of the United States, and according to the agreement just signed, it will be 21 years before any "trouble is even in sight."

When the Federal reports are completed it is confidently expected that the value of the pottery production for this year will total close to or possibly more than $15,000,000, which is a new "high water mark" for American pottery. There has been a decided increase in the vloume of the production of general ware in the western district, while there has been a falling off in the eastern territory, this being caused by so many of the Trenton plants getting out of the general ware lines and taking up the manufacturing of sanitary pottery.

Value of Production Increased.

There are fewer potteries in operation this year than before, and with the value of the production showing an increase, it is pointed out that the production of those plants now working has been gradually increased.

In the western field alone there are seven idle domestic potteries, these going out of business during the last few years by one "route" or another. Fire claimed one, another liquidated and litigation caused troubles of others. The number of kilns thus made idle is greater than the number of new kilns that have been placed in operation, so it must follow that the potteries now in business have been having greater sales, or the value of the production for the year would not total so much.

Report is current that the Pennsylvania China Co., at Kittanning, Pa., will enter the electric porcelain field very soon, and with this end in view, the company is making arrangements to buy electric current from the West Penn Railways Co. The plant of this company at Ford City is working to full capacity manufacturing general ware, and the manufacturing of electric porcelain will mean an added industry. Charles Howell Cook, of Trenton, N. J., formerly had an interest in this company, but disposed of his holdings early in the year.

The shortage of help in some of the western potteries is getting to be a serious problem. Both in the East Liverpool and Sebring districts this is being felt, many of the clayworkers having left the domestic branch of the trade to work in the sanitary potteries. There is also some annoyance in getting small help, but this happens every year soon after the public schools open.

All pottery workers, especially those employed in the clay shops, such as turners and jiggermen, have a deadly fear of blood poisoning. Another case has just come to light and Frank Wedgewood, of East Liverpool, O., is the victim. His ailment started from sores on his arm, caused by the constant running against his machine. Later particles of clay and clay dust got into the exposures, with the result that blood poisoning followed.

An additional kiln has been added to the plant of the Owen China Co., at Minerva, O., which gives the plant seven kilns in all.

No decision has been rendered by the officials of the Will S. George Pottery Co., at East Palestine, O., in reference to the rebuilding of one of the plants of the company which was destroyed by fire several months ago. The George company operates another plant there and two large potteries at Cannonsburgh, Pa., the trio being operated to capacity.

The death at Wheeling W. Va., recently, of Charles W. Franzheim, who was for four years president of the United States Potters' Association, from 1886 to 1900 removes from the trade one of the most active workers the trade ever knew. In the early life of the association Mr. Franzheim was always a member of the executive and labor committees, and as such he took part in the adjustment of all differences that arose between the workers and the pottery manufacturers. After his retirement from the manufacturing end of the business, he devoted several years to the selling of raw materials to pottery and glass manufacturers, and also acted in the capacity of ceramic engineer for a number of pottery and tile manufacturers.

Many pleased patrons attest the value of Ads in Brick and Clay Record's Want Ad Section.

UTILIZATION OF FULLER'S EARTH.

Domestic Production Might Well Be Increased—Imports Increasing Regularly.

The imports of English fuller's earth are regularly increasing in spite of the duty. Domestic production is still used chiefly for petroleum, whereas imported earth is used for edible oils. The deposits of fuller's earth in the South, especially in Georgia, South Carolina, and Alabama, are immense, and there is no good reason why any foreign earth should be imported. Deposits in Arkansas and Texas are also being exploited. Domestic earth could be easily produced at a profit at the present price if a sufficient output could be maintained. Several of the domestic earths bleach edible oils much better than the English. Lack of knowledge of methods of preparation for the market is one of the chief reasons why the domestic earths are not now used; also, some manufacturers do not yet successfully remove from edible products the slight taste these earths are apt to impart. At least one large producer of edible oils now uses only American material and it would seem a profitable side line for the clay manufacturer in the vicinity of the deposits mentioned to engage in the mining and shipping of fuller's

NOT SO NEW AFTER ALL.

The "Pittsburg Dispatch" is responsible for the following anent the hollow tile question:

Now that terra cotta hollow tile has come to be so well known as a house building material it is interesting to note, according to William Robinson Safford, a New York building authority, that the use of hollow tile is not so new after all. Hollow tile statisticians proudly point to houses built many years ago, with a view to proving their assertions that it is the most durable of all materials. An apartment house at Utica, N. Y., built 25 years ago, has been discovered by Mr. Safford in which hollow tile was used, much as it is used today. One of the most interesting facts about this building is that the idea of fireproof construction was paramount in its design from start to finish. Fireproof floors are used throughout. This, it is argued, goes to show that architects then were looking forward to the time, now said to be so rapidly approaching, when only buildings of the fireproof type will be erected. Floors in the apartments referred to are reinforced concrete, between old railroad rails, and they are said to be in as good condition now as when first laid. Rails being cheaper in those days than now it was more practical to use them, as well as economical. Now the modern method is reinforced concrete beams with tile spreaders, which are said to be lighter and much cheaper. Pittsburg architects have announced that they are preparing plans for apartments much after this pattern since this type is regarded as unburnable.

A BRICK'S A BRICK FOR A' THAT.

'Twas the voice of a brick in a building high,
  A brick of the lower tier;
"Behold my brothers mount up to the sky
  And leave me forgotten here.
But I hold my place, and I bide my time,
  That must come to the great and small;
And though I be lost in the dirt and grime,
  I'm the hope of the whole high wall.

"There be brothers of mine at the very top
  Of the building so proud and high,
And they think to go forward and never stop
  This side of the sun-kissed sky.
'Oh the poor dull bricks of the lower wall,'
  They cry as they look below,
But their harsh words ruffle me not at all
  For the base of their strength I know.

"It is on my shoulders they upward mount
  To their place in the sunlight fair,
And, though far below them, I still account
  Myself with the highest there.
For the law that governs I understand,
  And the law of the world to be;
It is this: We are all as one in the land,
  As the drops are as one in the sea."

—Charles Eugene Banks in Pacific Builder and Engineer.

ROOFING THE MEMPHIS UNION STOCK YARDS.

To Avoid Fire Risk, 400,000 Sq. Ft. of Roof Was Covered with J-M Asbestos Roofing.

The selection of roofing for the buildings comprising the new Memphis Union Stock Yards, Memphis, Tenn., was an important feature, as it meant the covering of some 400,000 sq. ft. of buildings with a durable roofing.

As the buildings were situated alongside a railroad, the fire risk was believed to be too great for shingles or any other inflammable roofing, and, on account of the space to be covered, a roofing unduly high in cost or that necessitated painting or graveling or any considerable amount of repairs or renewals was considered impracticable. After thorough investigation of roofings that were claimed to meet these requirements, the J-M asbestos roofing, made by the H. W. Johns-Manville Co., New York, was selected as the best; and all the buildings were covered with this roofing.

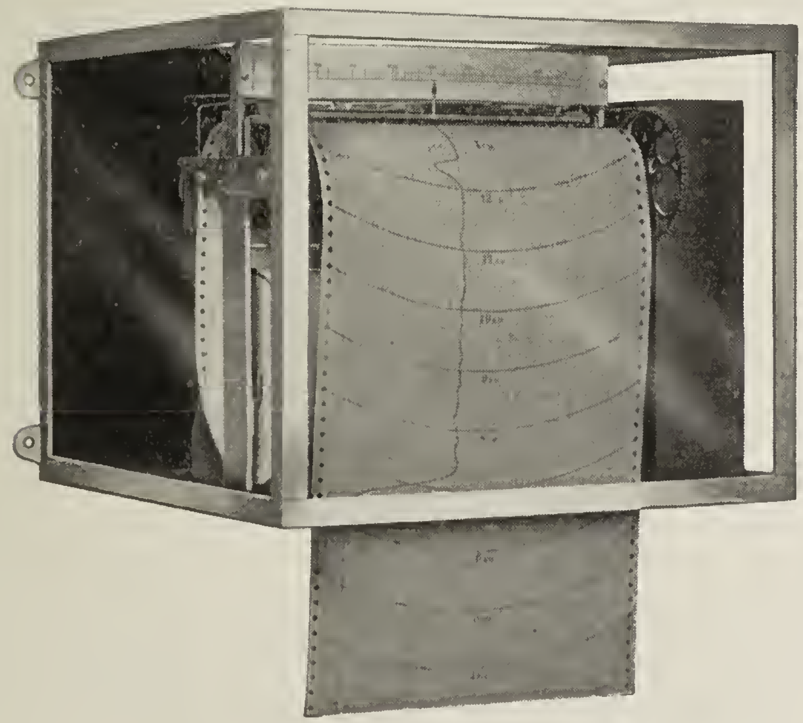
This fabric is made of pure, long-fibred asbestos (stone) felt, securely cemented together with a combination of Trinidad lake and other natural asphalts—two indestructible minerals. Approximately 400,000 sq. ft. were necessary, which area amounts to about 10 acres.

Memphis (Tenn.) Union Stock Yards, Roofed With 400,000 Sq. Ft. of Asbestos Roofing.

NEW CONTINUOUS CHART RECORDING PYROMETER.

New Instrument Designed as Pyrometer May be Used for Indicating Electric Measurements.

The Brown Instrument Co., of Philadelphia, and its associate company, the Keystone Electrical Instrument Co., have brought out a new continuous chart recording instrument, particularly designed for use as a pyrometer, but which can also be used for indicating volts, amperes, revolutions per minute, mechanical operations, etc., where a small current of electricity is required to operate a recording instrument.



Continuous Chart Recording Instrument.

making a single dot of ink momentarily on the paper at short intervals, every ten seconds or every minute as desired, and these dots practically form a continuous line. The instrument carries a six months' roll of recording paper, traveling a little over an inch an hour, which does away with the necessity of changing the charts daily, and for many operations the continuous chart is preferable.

This new instrument is of the frictionless type, the pen able. The record can either be torn off as desired every day or once a week, or it can be allowed to roll up continuously.

This new instrument is handsome in appearance, having a plate glass case, as shown. In designing the instrument it has been kept in mind that a recording instrument must be as simple and practical as possible.

Further information regarding this new type of instrument, which has just been placed on the market, will be gladly given by the above companies.

ELECTRIC CURRENTS MENACE TO CONCRETE.

Disintegration Caused by Exposure of Wet Concrete When Subjected to Electricity.

Stray electric currents are declared by Harold P. Brown, consulting engineer with an office in New York City, to be a menace to reinforced concrete structures as well as to water pipes. He has come to some highly interesting conclusions as to the effect of these currents upon such structures, according to the Pioneer Press of St. Paul.

It will be remembered that a lengthy article by Mr. Brown on this subject was published in July, 1911. He says that reinforced concrete cracks along the lines of the reinforcing rods when subjected to a potential of one and one-half volts in the presence of water. This is the case even though the rods may be buried in the concrete to a depth of six inches.

Mass concrete disintegrates, he says, in the presence of water when subjected to a heavy flow of electric current at a pressure exceeding one and one-half volts.

Structural steel foundation bolts and plates on brick or concrete structures are corroded in the presence of water by a flow of positive current. After the bolts have been damaged the concrete contiguous to the bolts and plates is disintegrated.

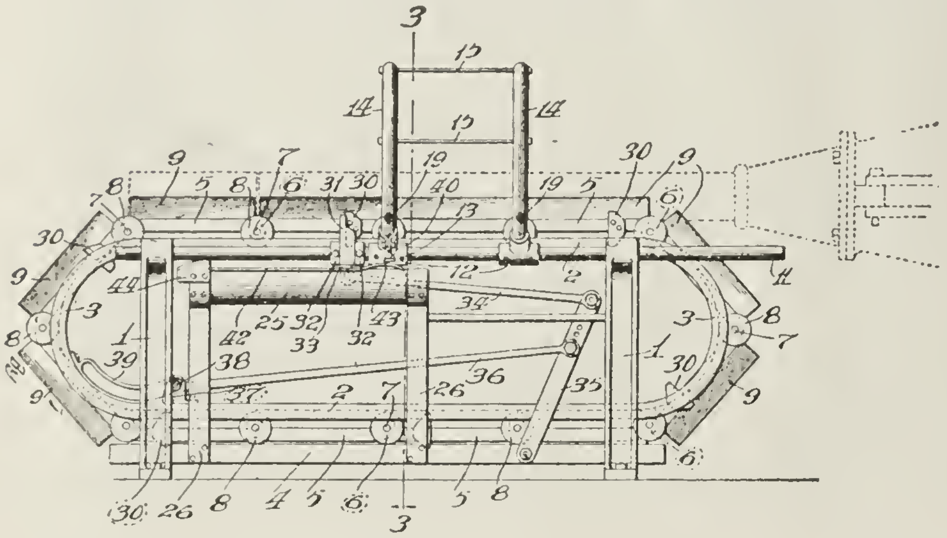
Numerous instances are cited in support of Mr. Brown's statement.

RECENT INVENTIONS of CLAY MACHINERY

Up-to-date Time and Labor-Saving Devices Reduce Cost of Producing Burned Clay Building Materials

1,004,062. TILE-CUTTING TABLE. Max Mueller, St. Louis, Mo. Filed June 8, 1910. Serial No. 565,822.

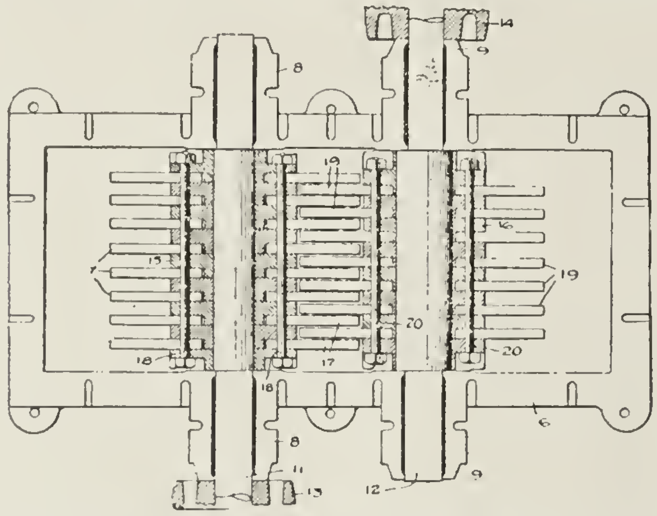
In a tile cutting table, a frame, endless track ways supported by the frame, an endless conveyor arranged for travel on the track ways, conveyor blocks spaced apart and carried by said conveyor, a shaft carried by the frame lengthwise thereof, a bow-shaped frame carried by said shaft, a cutting member carried by said bow-shaped frame, projections arranged at intervals on said conveyor, a lever secured to said shaft arranged for engagement with one of said projections so that as the conveyor is moved the shaft and said bow-shaped frame will move with the conveyor, a finger projecting downwardly from said bow-shaped frame, a fixed cam groove for engagement with said finger for moving the bow-shaped frame so that the cutting member will be forced through the tile, said groove having an upwardly inclined portion for elevating the cutting member from the tile and means operated by the conveyor for moving the bow-shaped frame and cutting member to its initial cutting position.



1,010,062. PULVERIZING-MILL. Charles H. Lyon, Elmhurst, N. Y. Filed March 16, 1911. Serial No. 614,774.

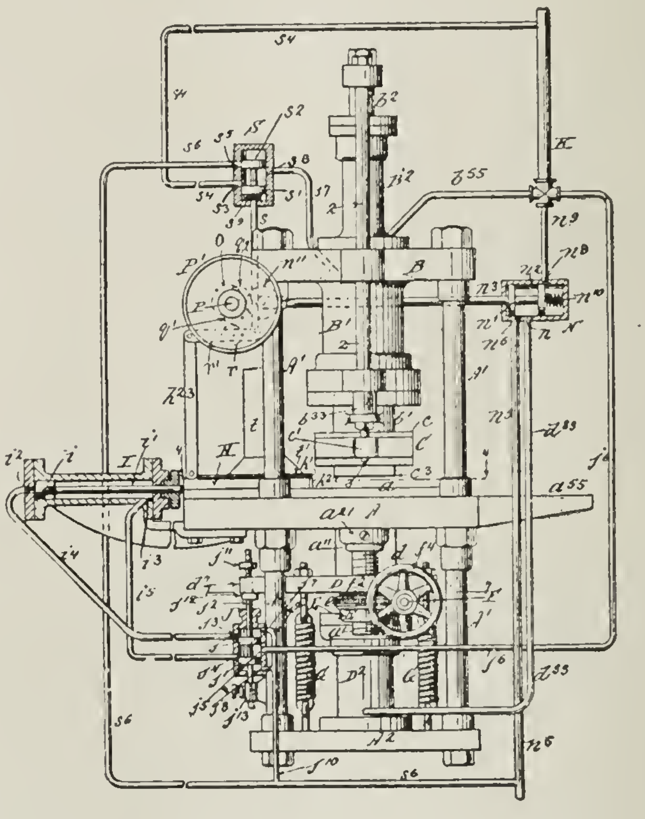
CUT 29.

In a reducing machine, the combination of the following elements; a box, a casing mounted thereon, a hopper on the said casing, a plurality of webs in the said box with bearings adapted to receive shafts, a plurality of shafts mounted in said bearings and having driving pulleys, pivot bars upon said shafts, a plurality of driving means adapted to rotate said shafts in relatively reverse directions and at different relative speeds, a plurality of disks mounted upon said pivot bars on the said shafts and adapted to receive breaker arms, a plurality of breaker arms mounted upon said pivot bars, the said breaker arms on the faster rotating shaft being adapted to swing pivotally and the said breaker arms on the slower rotating shaft being rigidly attached to said shaft, the breaker arms upon the faster rotating shaft being adapted during rotation to overtake, mesh with and pass the breaker arms upon the slower rotating shaft.



994,349. PRESS FOR PLASTIC MATERIALS. William B. Updegraff, New York, N. Y. Filed March 28, 1910. Serial No. 551,904.

In a press of the character described, the combination with a stationary mold block and supporting table, of an extractor die projecting into the lower portion of a mold in said stationary mold block, an extractor plunger upon which said extractor die is mounted, means for varying and prescribing the retractile thrust of said extractor plunger comprising suspender screws on the under side of the stationary mold table, supporting nuts on said suspender screws and means for simultaneously rotating said supporting nuts, retractile means connected with said extractor plunger tending to seat it against said supporting nuts, an upper die plunger formed with an annular flange on its lower end, an upper die block formed with a recess to receive the flanged end of the upper die plunger said recess being of greater depth than the flange on said plunger, an annular cap attached to the upper side of the die block and overlapping the annular flange on said plunger, means for actuating said upper die plunger and said extractor plunger by fluid pressure, stops prescribing the retractile thrust of said upper die plunger, a retractor for said upper die plunger consisting of an auxiliary plunger inverted with relation thereto and rigidly connected therewith, and means for maintaining said auxiliary retractor plunger under continuous fluid pressure for the purpose described.



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Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

Brick from Coffeyville, Kans., were shipped 3,000 miles to Vancouver, B. C., where they were used for the facing of a new 8-story addition to the Empress Hotel. This would seem to indicate a scarcity of brick on the Pacific Coast.

The Duffney Brick Co., Mechanicsville, N. Y., will soon install an electric system for operating machinery at its plant, to replace the steam power now in use. Other improvements include a large steam shovel, which will be used for getting out the clay.

It is said that Los Angeles is "hollow-tile mad," the tendency, there, being to use hollow clay tile in preference to concrete. Hollow tile also are much used for building residences, and builders on the Coast have discovered that it is possible to construct homes of this material as cheaply as of wood.

Operations have been begun at the new plant of the Barr Clay Products Co., at Wanamingo, Minn. This plant, which is said to be the largest brick and tile plant in that section of the country, has 12 kilns of the down-draft type, with a capacity of 120,000 each. The entire plant is reported to have cost about $275,000. The output will be vitrified brick, drain tile, fireproofing and silo block. Electrical equipment is used throughout, each machine having a separate motor. The power is supplied by the Consumers Power Co., from its plant at Cannon Falls. The officers and directors of the company are: Chas. O. Roe, president and manager; N. M. Olson, vice-president; H. S. Swan, secretary and treasurer; A. C. Schleicher, Martin Sevareid, Hon. A. V. Anderson, and C. D. Rice.

"Steeple Jack" Elsworth Smith fell a distance of 70 ft. at the Paducah (Ky.) Pottery. In falling he fell upon his brother and while neither of them was killed, both were badly injured.

The Reliance Brick & Tile Co., Belle Plaine, Ia., is installing an electric conveying system for carrying the brick into the kilns and out again after burning. Machines are being built in the company's own work shop and the power will be supplied from the electric plant at the works. The new system, it is said, will save several thousands of dollars a year to the company. Cement runways are also being put in from the storage yard to the freight cars, which will materially reduce the cost of handling the finished product.

Hobart Gassoway, a workman at the plant of the Hydraulic Press Brick Co., Brazil, Ind., while working at a pug mill, was seriously injured by his clothing catching in the machine. He was drawn into the machinery and his clothing was torn from his body and wound around the shaft.

The property on Austin Ave. near Diversey Blvd., Chicago, which was occupied for many years by a brick plant owned by the Thomas Moulding Brick Co., was recently sold to the Hetler Lumber Co., at the rate of 50 cents a square foot.

C. J. Mitchell, who has been engineer at the Peru (Kansas.) brick plant for the past 2½ years, has gone to Blackwell, Okla., where he will have charge of the engine room in a brick factory.

The Brown Brick & Tile Co., Garrison, Tex., has filed amendments to its charter and changed its name to the Garrison Brick & Tile Co.

Plans are on foot for doubling the capacity of the plant of the Athens (Tex.) Fire Brick Co. One hundred men will be added to the present force and the plant will run day and night during the next year in order to fill the orders for fireproofing. Orders aggregating 300 cars are contracted for to be used in Houston, other large orders will go to San Antonio and Dallas. On account of the scarcity of laborers, workmen are being brought from the Mexican border.

Owing to a shortage of gas in the Kansas gas belt, it is said the owners are preparing to dismantle their clay plants and will locate in Oklahoma, in the gas field there.

The state agricultural school at Jonesboro, Ark., will have a pottery exhibit at the state fair at Hot Springs.

Suit has been filed by I. N. Clossen against the Coffeyville Shale Brick Co. for $4,980 for personal injuries received. While working for the company as a night burner, he ascended to the top of a kiln, which he claims was out of repair, and while performing his duties the kiln roof gave way, hurling him 20 ft. to the ground, among the hot brick, injuring his leg, foot and ankle. Among his claims was one for $250 for "pain and anguish."

A. L. Gilmore, a civil and landscape engineer of Binghamton, N. Y., has been appointed resident engineer for the Binghamton Paving Brick Co. of that city.

P. K. Tucker, of Sioux Falls, S. Dak., was in Chicago a few days ago representing the Northwestern Brick & Lime Co., of which A. E. Whetstone is president. Mr. Tucker has in charge the installation of a new sand-lime plant at Seattle, Wash., and was in Chicago purchasing special machinery for same.

The new shale brick plant at Ashtabula, O., has been placed in operation, furnishing employment for upwards of sixty men, with a daily output of 35 to 50 thousand common brick.

Mrs. G. A. Buckley, who for several years has operated an extensive brick plant at Montrose, Colo., has turned the business over to her son John. He has taken as his partner Mr. Dowd, who has been at the head of the brick department of the Denver Sewer Pipe & Clay Co. for the past eight years. In speaking of her retirement, Mrs. Buckley said: "Since the death of Mr. Buckley it has been my ambition to build up a good business that I could turn over to my son John when he was old enough, and since he has recently graduated from High School, this ambition has been accomplished."

Clayworkers in this country, who complain of low wages, should compare their lot with their brothers in Japan, who receive an average of 28.5 cents per day for their arduous labors. Those who favor free trade should consider well what would be the result if the doors of the United States were opened to the product of Japanese labor. How long could American clay manufacturers compete with the Japanese at this wage?

Brickmakers in New Britain, Conn. have shown their generosity by donating over 100,000 brick to be used in the erection of the St. Agnes Orphanage at West Hartford. The contributors are as follows: The Richard Murray Brick Co., Berlin, 25,000; R. O. Clark Co., East Berlin, 25,000; John Carbo, Kensington, 10,000; Standard Brick Co., New Britain, 15,000 Donnelly Brick Co., New Britain, 10,000; J. W. Holmes, New Britain, 10,000; Joseph Towers, New Britain, 10,000.

Emil Bauer, secretary and treasurer of the Tyro (Kans.) Vitrified Brick Co., shot himself, in the company's office at the brick yard in Tyro, Sunday, October 20th, causing instantaneous death. Worry over the failure of gas which the company used for burning brick, was stated to have caused temporary insanity, which led him to take his life.

A concrete roof, connecting yards at Richmond, Va., collapsed recently and the contractor will be asked to explain, before the building inspector, the cause of the failure.

The property and plant of the Palmer Brick Co., Atlanta, Ga., has been transferred to Mr. Gatins, for a consideration of $144,000.

Chas. E. Bishop, of Kingston, N. Y., recently purchased the steamer, "City of Hudson," which had been lying at Newburgh for some time. He will dismantle the craft and the upper part will be used for firing brick kilns while the lower part will be used as a brick barge.

It has been a busy season at the plant of the Saco (Me.) Brick Co., and the season's output will average in the vicinity of four million brick. In former days when brick were made by hand and laborers worked from 4:00 a. m. to 8:00 p. m., only about 8,000 a day could be made at this same plant.

B. W. Bennett & Co., Muncie, Ind., manufacturers of building brick, in a recent communication, stated that on account of the scarcity of labor, the company was behind with its shipping orders and that during the past year the question had not been, how and where to sell brick, but how to get them made. The plant has been busy throughout the season and the prospects are that work will be continued until late in the year.

Two workmen were seriously injured on October 10th, when with a roar that could be heard for a block, a portion of the second floor of the new Y. M. C. A. building in process of construction at Louisville, Ky., gave way, burying the men in the debris. Other workmen escaped with slight injuries and were saved from being crushed to death only by the arching beams, which protected them.

The Coral Ridge (Ky.) Clay Product Co., has just installed a new Chambers machine and cutter.

We are advised that the Sheldon Brick & Building Supply Co., of Urbana, Ill., furnished the brick which were used in the construction of the Lincoln Memorial at the State University, Urbana. Through an oversight this fact was not mentioned in the write-up appearing in our last issue.

J. B. Clemens, who planned and built the drain tile plant of the O. C. Clay Works, Oakland City, Ind., has severed his connection with that firm and has taken up other business.

The Walker Frank Brick Co., of Detriot, Mich., incorporated with a capital of $50,000 has changed its name to the Walker & Frank Brick Co. of Springwells, Mich.

Eugene Parker, formerly of Parker Bros. Tile & Mantel Co., Los Angeles, Cal., will act as sales manager of the tile department of the China Products Co., National City, Cal. A recent addition to the plant of the California China Products Co. was a kiln shed erected at a cost of $1,800.00. This company is pushing the sale of its fancy tile, which are known as biscuit tile and are beautifully finished in a great variety of designs and colors. Crude oil is used for burning the ware, the flames being thrown upward and then drawn down through the bottom of the kiln. The company recently began the manufacture of a yellow mixing bowl on a commercial basis.

The plant of the Norton (W. Va.) Brick Co. was burned Oct. 8th, entailing a loss of $25,000.

In describing the tympanum panel, with eagle design, which was shown in our October 1st, issue, through an oversight, credit for the execution of the work was given to the Atlantic Terra Cotta Co., instead of the New Jersey Terra Cotta Co., of South Amboy, N. J.

Roswell, New Mexico, which has experienced quite a boom in the last few years, on account of its irrigated lands, has awakened to the importance of having brick and tile, of which enormous quantities are shipped in at an enormous freight rate, made near at hand. It is said that a large supply of fine clay exists near Roswell, which might well be made use of to produce the building material needed there.

The new brick plant built by Wm. Korthamp & Son at Hillsboro, Ill. is practically completed. $15,000 worth of machinery has been installed, which will be operated by two 100 h. p. electric motors. The three top strata of clay will be used for making ordinary building and paving brick which will be used in the construction of permanent buildings for the plant and a number of kilns. Later a shaft will be sunk to the depth of about 25 ft. and electric hoisting and self dumping machinery will be installed for procuring plastic fire clays from which fancy building brick will be made.

Oscar A. Newell of Hartford, Conn. has been appointed receiver of the New England Brick Co., which owns the plant at Avon.

The Bay City Brick & Tile Co., Bay City, Tex. has ordered several thousand dollars worth of modern, up-to-date brick machinery, with a view of enlarging its plant, and introducing the manufacture of various articles which the company is not now producing.

E. J. Griswald, of Tomah, Wis., was obliged to have the wall of his new house rebuilt as the cement used proved to be of no account.

The Home Products League of Sacramento Valley, Cal., which is doing excellent work in its efforts to induce the use of home products, has asked that Sacramento brick be used in the Y. M. C. A. building at Sacramento.

The Evening Telegraph of Bucyrus, O., recently celebrated its twenty-fifth anniversary by printing a special edition of 58 pages. Frank L. Hopley, secretary of the Clay Products Exposition Co., is treasurer of the company that publishes the paper. The Hopleys seem to be very much in the majority in the organization, the title page of the Telegraph carrying the following list of officers: John E. Hopley, president J. W. Hopley, vice president; J. R. Hopley, secretary and Frank L. Hopley, treasurer. One of the interesting features in the anniversary number was a full page reproduction of a letter of congratulation received from President Taft over his autograph signature.

Among other improvements recently added to the plant of the R. B. Small Co., at Columbus, Ga., is a Thew automatic shovel.

An explosion of dynamite, by persons with malicious intent, in the brick plant of the Red Cliff Clay Products Co., Medicine Hat, Alta,., Canada, destroyed a press and wrecked buildings, causing a damage of $10,000.

The closing of 14 plants in the Kansas gas belt is liable to cause a rise in prices there. It is said that brick are already selling $1.00 higher than a year ago. The increase, however, affects common brick only. It is said that Kansas City building supply firms and brick contractors, owing to conditions prevailing, have refused to bid on jobs where over a million brick were required.

NEW PLANTS AND ADDITIONS.

The Corona (Cal.) Citrus & Clay Co. has been incorporated with a capital stock of $200,000. Its principal place of business is Los Angeles and the directors are Chas. A. Nash, David J. Daze, Will J. Daze, Francis A. King of Los Angeles, and Robt. N. Brown and Eugene Brown of Eagle Rock.

C. A. Taylor & Co., manufacturers of fire brick at Cincinnati, O., will erect another fire brick plant at Enterprise, Ky., to cost $10,000.

The Sanitary Brick Co. is a new Chicago organization which recently incorporated with a capital stock of $50,000 to manufacture brick and other clay products. The industrial parties are Albert Sabath, Jas. McAndrews and Henry Lutzenkirchen.

Bernhardt Bros. of Portland, Ore. are examining clays in the vicinity of Waldport, Ore., with a view of establishing a brick yard there.

The Clay Product Co., recently organized at Lexington, Ky., by Thos. L. Walker, former postmaster, and several other capitalists of Lexington, purchased 40 acres of land in McCracken county. The amount involved, it is said, was $52,000. It is the purpose of the new company to ship clay on a large scale to china ware potteries in Ohio.

The Geo. S. Good Co. has broken ground at Clearfield, Pa., for a new sewer pipe, brick and tile plant, which will occupy 15 acres of land and furnish employment to 500 men. It is expected that the plant will be ready for operation by January 6th and the company has already booked sufficient orders to keep the factory in operation steadily for a year.

The Clay Products Co., of Brazil, Ind., according to an announcement by a member of the company, will rebuild its mammoth plant recently burned, at Brazil, Ind., and has placed an order with the J. D. Fate Co., of Plymouth, O., for a large quantity of new machinery.

Workmen are now clearing away the debris of the Swift Terra Cotta Brick & Tile Co.'s plant, which was burned September 16th. A new one-story building 86 x 120 ft. will be erected and the plant will be under lease to F. A. Guignon and F. B. Graham, for the manufacture of drain tile.

The Malcolm Brick & Tile Co., Sycamore, Kans., has procured a charter and will soon begin the construction of its plant. A large tract of shale land has been secured and the factory will be of the most approved type, built for using coal, but fitted for oil burning also. In drilling for oil wells recently, from 3 to 8 ft. of coal were discovered and citizens of Sycamore are enthusiastically awaiting future developments.

Wm. Eickenser, president of the Jonesburg (Mo.) Clay & Mining Co., and Mr. Burke, of St. Louis, it is said, are considering the establishment of a fire brick plant near Jonesburg.

Another big factory will be located at Chicago Heights, Ill. The Whitacre Fire Proofing Co., of Waynesburg, O., has purchased 75 acres of ground just east of the Ludowici Celadon plant, where a plant for which machinery has already been purchased will at once be erected. The company, it is said, already has a large number of orders booked and it hopes by the first of January to have its plant completed and ready for operation. The officers of the Whitacre Company are R. E. Whitacre, president; C. C. Whitacre, secretary and treasurer, and J. J. Whitacre, manager.

A location has been secured for a plant which is to be erected by the New Mexico Fire Brick Co. (incorporated for $50,000) at Gallup, New Mexico, and construction work will begin at an early date. It is said the clay deposits found there are of a superior quality and a good market is assured, as there is a strong demand for fire brick.

As soon as the fire had died out and the ashes were cooled, work was begun on the construction of the new plant at Little Falls, Wash., by the Standard Clay Co., to take the place of the one recently destroyed by fire. The new plant will be fireproof and up-to-date in every particular and will be much larger and better than the one destroyed.

Ground has been staked by the Marshalltown (Ia.) Sewer Pipe & Tile Co. for extensive improvements and additions to its plant. Its storage yards will be enlarged, its tracking facilities for loading increased, and new kilns will be built. Warren Overpack, of Medicine Hat, Alta., president of the company, is personally directing the work. The company's business has developed so rapidly that it is far behind with its orders.

The Heinz Roofing Tile Co., Chamber of Commerce Bldg., Denver, Col., will at once erect a plant at Denver for the production of roofing tile, for which machinery has already been purchased. Geo. P. Heinz is president of the company and W. H. Borich treasurer.

The Builders Brick & Supply Co. of the Bronx has been incorporated in New York City with a capital stock of $300,000, to deal in brick and builders' supplies. The incorporators are J. J. Tully, T. J. Dwyer and T. J. Bannon, of 55 John street, New York City.

The S. E. Weller Pottery Co., Zanesville, O., sustained a loss of $65,000 by a destructive fire which destroyed its pottery No. 2.

The Rollins Block Coal & Clay Co. has been organized at Jackson, O., with a capital of $100,000 for the purpose of mining coal and clay. W. C. Martin is one of those interested.

The Inland Clay Products Co. was recently incorporated in Chicago for manufacturing and dealing in clay products. Capital, $150,000. The incorporators are Henry Burkholder, John A. Voorhees and J. W. Ware.

Edwin M. Knowles and Thos. B. Anderson, of Chester, W. Va., will erect a 15-kiln pottery at Newell, W. Va., on which upwards of $250,000 will be expended.

Hilton J. Doggett, of Baltimore, Md., engineer for the North East Milling & Mining Co., is making preparations for the erection of a plant at North East for the mining of silica, flint, feldspar, kaolin and clays.

The South Paris China Co. has been incorporated at Paris, Tenn., with a capital stock of $25,000. One hundred acres of clay lands in Henry county have been purchased whereon a plant will be erected for the manufacture of china ware.

The Mount Denis Brick Co., Ltd., has been incorporated with a capital of $200,000 at Toronto, Canada, to manufacture and deal in lime, clay and other building materials.

The Standard Clay Co., at Tacoma, Wash., will at once begin the erection of a bigger and better plant to replace the one which was recently destroyed by fire.

W. L. Nichols, of Wellsburg and Wheeling, W. Va., manufacturer of wall and floor tile, is contemplating the establishment of a plant at Okmulgee, Okla.

The Old Elms Pottery Co., of Hamden, Conn., has filed a certificate of incorporation with a capital stock of $10,000. The incorporators are Jos. C. Lippincott, of New Haven, Harry W. Austin, of West Haven, and John P. O'Halloran.

Consular Report 9649 states that a customer in a Latin American country needs about five miles of 18-in. drain or sewer pipe or machinery for making drain or sewer pipe. He wants full information on both propositions with net prices on board ship New York. The pipes are for conducting water for irrigation purposes. Address Consular Reports, Washington, D. C.

The Texas Terra Cotta Co. has been incorporated at Athens, Tex., with a capital stock of $100,000. The incorporators are J. E. Miller and P. A. Habel.

The Fort Scott Brick Co. will at once rebuild its plant which was destroyed by fire at Fort Scott, Kans.

The Norfolk Brick & Tile Co. is a recently organized Virginia corporation. The capital stock of the company is $170,000, and Thos. Shelton, of Norfolk, Va., is the statutory agent.

S. C. Sangston, G. O. Etherington and G. W. Preston, of Bridgeton, N. J., have formed a company with a capital stock of $225,000 to mine clay, gravel, etc.

An American consul in Mexico reports that a resident of his district is planning to establish a brick plant and wishes to get in touch with machinery manufacturers. Address No. 9595 Consular Reports, Washington, D. C.

The Cambria (Pa.) Clay Mfg. Co. announces that many improvements will be added to its plant.

The Harbison-Walker Refractories Co., of Pittsburgh, Pa., has purchased land at Wickboro, Pa., for the purpose of erecting a new plant.

The Ridgway Brick Co. is contemplating increasing the capacity of its plant at Ridgway, Pa.

The Valley Brick Co., Charlestown, W. Va., is contemplating increasing its drying capacity before spring.

The Red Shale Brick Co. has been incorporated at Asheville, N. C., with a $25,000 capital stock to manufacture brick.

Fire, thought to have been started by a tramp, almost entirely destroyed the plant of the Zoar (O.) Fire Clay Co., October 19th, causing a loss of about $15,000, partially covered by insurance. It is stated that the plant will be rebuilt at once.

The Coral Ridge Clay Products Co., of Louisville, Ky., is being organized and, it is understood, will install a brick plant at South Park, a suburb.

A clay products company, with a capital of $250,000, and of which W. J. Douglas, of Toronto, is the head, has signed an agreement to erect a large plant at Tofield, Alberta.

CALIFORNIA.

San Francisco, Oct. 22.—While naturally there is considerable interest in politics these days, just before the presidential election, it cannot be said that the political situation is having any vital influence on business in general. If the fact must be admitted, local business men are not taking politics very seriously this fall. At all events, building operations on the Coast are holding up better than usual for this time of the year, especially in the south, where the climate permits of building pretty much all the year round. In September, the value of building permits issued in the principal large cities was not quite up to the record for August in most places, but in San Diego, for instance, the valuation was over a million and a half, or over twice as much as for August. The southern cities are doing a great deal of building and the prospects are for a long-continued activity in this respect. The rapid growth of the population is the chief reason. In the northwest, the present season has been about normal, with strong indications for a big revival of building next year. In San Francisco, the condition in the building trades has been satisfactory for some months and there is a great deal of important work now on the boards.

The Service Building, the first building for the Panama-Pacific Exposition, was begun October 17th, and to celebrate the event a parade of trucks loaded with the building materials took place on the downtown streets. Next month the huge Machinery Hall will be begun; or, at least, the contracts will be awarded. This activity in connection with the Exposition of course has a most salutary effect on business in general, and many new hotels and apartment buildings, which have been delayed, will be commenced.

The present season has not thus far shown any material increase in the demand for common brick, though the demand has been normal. The price of $7.50 per M. remains firm and will probably be maintained indefinitely despite the large surplus stocks now on hand. It is customary for the various brickmakers to have a big supply on hand at this time after a season of active production, and this supply will be further increased, as most plants will continue to run until the first of the year, or until the winter rains begin. As usual, many common brick plants will close down for two or three months during the winter. Many of the plants will add extensive improvements before next season.

The brick plants of Los Angeles have a combined daily capacity of about 800,000, and all the different concerns are operating full force. The demand is still in excess of the supply at present on account of the building boom. A shade better prices are being obtained on standard products as the outside competition is very slight.

The terra cotta situation here is about as usual. Business is holding up quite satisfactorily and the demand for the highest grade materials increasing in response to the enthusiastic educational work of the various terra cotta specialty salesmen here. The appeal for the use of terra cotta is strongest to the architect, and by reason of the fact that this product is highly artistic, durable, economical and adaptable, it is being more and more favored in specifications. The demand for face brick and fancy brick in general increases in demand in just about the same proportion as architectural terra cotta. In the San Francisco market the only product that is at all scarce is the highest grade of fire brick. Prices for this are somewhat advanced in consequence.

Frederick C. Davis, manager of the Pacific Clay Products Publicity Bureau, reports that the educational publicity campaign which the bureau has undertaken is bringing excellent results in all parts of the state. This bureau is concerned primarily with the idea of illustrating the superior merits of vitrified sewer pipe over concrete pipe. That vitrified clay pipe is more durable and economical in the end has been shown by many tests and by comparisons between different pieces of public work where vitrified pipe and other materials were used. Practically every community contemplating sewer improvements now looks into the matter thoroughly before deciding upon accepting inferior materials, no matter what the difference in the initial cost. Even where the cheaper sorts of clay sewer pipe are used, the results are better than with the ordinary grades of concrete pipe. The publicity bureau, however, is doing all in its power to discourage the production and use of the low grade clay sewer pipe as the difference in cost is not usually great and the superior qualities of the high grade vitrified pipe make this the logical and best material for sewer systems.

Nat Ellery, manager of the Brick Builders' Publicity Bureau, is collecting data from different parts of the country on all the prominent failures in concrete construction work. This data he is planning to use in his publicity campaign in the interest of brick and clay products. The booklet just published by the bureau entitled, "Use of Materials in Construction," by Mr. Ellery, has already been widely circulated and has been commented upon with much favor by the trade and engineers. Other literature will be issued from time to time.

The Golden Gate Brick Co. is supplying 150,000 sandstone brick for a new business block at Atwater, Cal., and 200,000 sandstone brick for two business buildings at Antioch, Cal. The same company is furnishing buff pressed brick for Engine House No. 28, for the San Francisco fire department. Light buff is being used for the stretchers and dark buff for the heads. The company is also supplying its white enamel brick for the interior.

The terra cotta for the Insurance Exchange Building, at California and Leidesdorff streets, is to be supplied by Gladding, McBean & Co. The amount of the contract is about $50,000.

The Atlas Paving Brick Co., a new concern headed by L. A. Steiger, manager of the Steiger Terra Cotta & Pottery Works, is erecting two new kilns at its plant at Bay View, 32nd and G streets, San Francisco. The new company has taken over the plant of the company formerly known as the Bay View Brick Co., and the improvement work is being pushed as rapidly as possible. Operations will probably be begun early next year.

The Stockton Fire & Enamel Brick Co. has opened a branch office at 332 Montgomery street, San Francisco. Eugene Corrigan, formerly with the Carnegie Brick & Tile Co. as salesman and manager of their Mission branch, is in charge. Mr. Corrigan will also have charge of the Carnegie office at the same address, succeeding D. H. Hoerner, who is about to return to ranching at Napa, Cal.

S. W. Winsor, manager of the Silica Brick Co., at Sacramento, Cal., has been given a judgment for $7,300 in a suit against the company for the recovery of salary and percentage of profits, as per his contract with the concern. He asked damages in the sum of $17,000. The defendant company will probably appeal the case.

The Pomona Brick Co. has been awarded a contract to supply 450,000 brick for the First Presbyterian Church at San Diego, Cal.

NEW YORK.

New York, Oct. 26.—With most of the brick plants in the east closed down for the season, dealers and consumers are face to face with the problem of price and supply, with a prospective demand far greater than that which has been reported in any fall since 1906. If this demand materializes on the scale that architects in the metropolitan district report contemplated work on their boards, it is practically certain that there will be a marked restriction, if not an actual shortage of common brick in this section of the country in the early spring.

There are five well founded reasons for this statement. Brick manufacturers, in common with industries all over the country have experienced a serious shortage of labor and, in consequence their outputs have been seriously restricted this year. Their total output for the Hudson river district will not be more than 900,000,000 brick. Outputs in the Raritan river districts have been from 20 to 30 per cent below capacity. In Connecticut, the shed supplies are one-third below normal. In Long Island, both common and sand-lime brick supplies are limited and in the Bergen section of New Jersey, the plants have had all they could do to keep up with local demand and provide a moderate reserve.

Brick to Be Scarce Next Spring.

The second reason why brick will be scarce next spring is that the prices on all building materials have advanced in exact proportion as steel has advanced with the result that engagements for future supplies of building materials, and especially for common brick, are being made as far into the winter as manufacturers are willing to sign for. It is not therefore possible to even estimate the actual quantity of salable brick in the sheds for open market buying. The very fact that practically all materials are well sustained even at the higher prices, indicates a market of considerable stability and yet, all the prospective work will not be announced until after the general election in November. A survey of the brick situation in common with that of all other building materials, based upon the fact that the steel companies are booking orders for delivery into the second quarter of 1913 and foundry iron is being sold for third-quarter delivery, guarantees, in effect, that despite the outcome of the election, an exceptionally active building season between September and January first.

The third reason is discovered in the fact that Manhattan dealers have yet to stack, if they are going to stack at all. The fall reserve has not yet been put in, despite the fact that brick is almost sure to be stiffer at $7.25 than it is now. Although $7.25 is top at present, most of the brick is going out at $7, but even at that figure, the dealers are actually putting off stacking, expecting another "bargain sale," providing the manufacturers begin to flood the market just before navigation closes.

This leads us to the fourth reason. Manufacturers are not in a position to throw their brick on the market this fall. Even their early fall shipments will be ordered under cover rather than sold at "bargain" prices, but the dealers cannot be made to take this seriously. Conservative dealers, who study the building tendencies, are not taking chances, but even these are engaging supplies in barge-load lots which will come down and go direct to cover. The big dealers may be said to be following this plan, but the smaller ones who cannot afford to tie up large capital are the very ones who are postponing stacking and taking a long chance.

The fifth and most important reason why common brick will be scarce early next spring is because front brick is in such heavy demand now. Stone quarries are not able to kep up with the demand for limestone and granite under the present shortage of labor and the architectural terra cotta companies are filled up well into the first quarter. Even rofing slate quarries are entirely cleaned out of supplies thus early in the season, engagements calling for deliveries even into May being far from exceptional. Steel deliveries are way behind and upon unfilled tonnage for eastern building construction more than 400,000,000 common brick are already eliminated from the reserve supply. When these facade and structural materials are in a tight market, it is sure to result in a correspondingly tight market for common brick.

Building Year a Prosperous One.

The building year for 1912 closed on Oct. 15. On the whole it has been a prosperous one for the brick manufacturer, particularly for the Raritan river and Monmouth clay interests. The year has been remarkable for the quantity of Jersey brick that has been used here, the percentage of total consumption in New York having jumped in the last twelve months from ten per cent to thirty. It has been remarkable for the large quantity of Connectitcut brick which has been used here, especially in the Bronx. These gains have been only partially at the expense of the Hudson river interests, although, had there been an absence of manipulation, the price at market would have been as high, if not higher, because a larger quantity of brick was in demand than in any previous year since 1904.

On more than one occasion during the year, the entire supply of Hudson river brick was taken and the market was left without a single barge load, despite heavy competition and the barring out of pales and light hards. The eastern public is slowly, but surely, being educated to the advantages of using brick instead of concrete and advertising has helped to do it.

The brick manufacturers, throughout the east, are in a very prosperous condition. They have more money in the bank, up through the Hudson valley, than they have had in several years past, simply because they have been selling their brick this year on the business-like principle of meeting the demand as it came, instead of trying to anticipate a demand and consequently flooding the market as they have in recent years.

OHIO.

Columbus, O., October 25.—Although the fall season has arrived, it does not seem to have any effect upon the thriving business done by the brick and sewer pipe manufacturers of this state. There are no inactive plants reported, except those of old-time construction, which have not been in operation for many months and possibly years. In the eastern part of the state the sewer pipe plants are working to capacity, orders are heavy, and freight cars scarce. The brick manufacturers throughout the state, and this means those who manufacture all lines, are just as active as the sewer pipe makers. The year has been a good one, notwithstanding the fact that it is a "presidential year." Everywhere, among the clay manufacturers, one hears the same story, "we are too busy to meddle in politics."

The Bankers Surety Co., of Baltimore, Md., which company took over the plant of the Champion Brick Co., at Wellsville, to protect itself on a mortgage which the company holds, is now offering the property for sale.

Frank Holland, who has been for several years superintendent of a brick plant at Freeport, Pa., has accepted the management of the plant of the Valley Shale Brick Co., the main offices of which are at Cleveland, O. Mr. Holland was, before he went to Freeport, connected with brick and sewer pipe plants in the upper Ohio Valley, and is well known to brick manufacturers in that section of the state.

The new plant of the Malvern Clay Co., at Malvern, O., has been placed in operation.

After working months to complete the construction, operations have been begun at the new plant of the Ashtabula Shale Brick Co., at Ashtabula, O. The company will give employment to about 75 men, and will have a monthly payroll of nearly $4,000. The product will be vitrified brick. In all the company plant comprises eight separate buildings.

The mining of clay will be carried on by the William Job Coal Co., which has just been formed here in Columbus with a capital stock of $50,000 by William Job, C. C. Williams and Henry C. Taylor.

Brick made at the Carlyle plant in Portsmouth, O., are now being used in the paving of streets in Winchester, Ky.

John Kratz, of Columbus, has taken the position of superintendent of the plant of the Alliance Brick Co., of Alliance, O., and he has removed his family from this city to Alliance.

Just 25 years ago October 8, last, the first kiln of sewer pipe was fired at the plant of the Knowles, Taylor & Anderson sewer pipe plant in East Liverpool, O. This company controlled the property for about 12 years, and then sold it to Charles A. Smith, of Chester, W. Va., who continued to operate it. He later sold the plant to the American Sewer Pipe Co., which concern continues to operate the plant to this day, and considers the property one of the best under its management. Thomas Anderson, one of the original owners of this plant, is now superintendent of the clay department of the Edwin M. Knowles Pottery Co., at Chester, W. Va., which is in West Virginia almost directly across the Ohio river from the former sewer pipe plant he owned.

President and General Manager G. E. Carlyle, of the Carlyle Paving Brick Co., at Portsmouth, O., is an optimist, as is witnessed by his statement, as follows, anent the condition of business:

"We believe the general business in most lines is better than it was four months ago. Our output for 1912 was sold, by the middle of July. We found business a little slow in the early months of the year, but toward the middle of the summer our business became very active, and since the first of July we have been compelled to turn down considerable business.

"Labor is well employed in the Portsmouth district. We have found it necessary to secure considerable labor to move stock during the past three or four months, and we have experienced some trouble in securing this help. Our help in other departments, however, has been satisfactory.

"For the past 60 days there has been considerable shortage in cars. Our usual custom is to load in box cars, but these we found impossible to secure and we have been compelled to load in gondolas, which necessitates considerable extra labor. Our railroads have been able to furnish us enough of the gondola cars to move our output.

"It looks as though the business world was not considering the Presidential election or has discounted the result. In our line we look forward to a very prosperous year in 1913."

Columbus, O., October 29.—The demand for face brick in Columbus and, in fact, all parts of Ohio, is still good and manufacturers report an encouraging tone to the market and many factories are still behind with their orders. The pleasant weather which has been prevailing for some time has the effect of permitting active building operations to continue and as a result there is a good demand for both face and common brick. Prices are up in both branches of the trade and there is every indication for a still farther advance in the near future.

One of the worst drawbacks to the trade is the growing car shortage, which is hampering the free movement to a great degree. In many cases the car supply is only about 75 per cent of what is desired and as a result shipments are cut off to that extent. In the Hocking Valley, where most of the brick plants are located, the car shortage is very pronounced.

The paving brick market is still active, although the season for contracting is about over. The past season was a good one, as many municipalities contracted for a large amount of paving and a number of country highways were also constructed of paving block.

The outlook for the future in the brick trade is good in every respect. Orders are still coming in fast and manufacturers are now arranging for the coming season. Many of the factories will be extended and enlarged and the Ohio output will be materially increased next season.

President J. M. Adams of the American Face Brick Association reports a quietude in the association. Arrangements are being made to start a number of movements after the coming annual meeting of the organization, to be held in Chicago in conjunction with the Clay Show. After that time the question of freight rates, concessions from railroads and other important matters will be taken up.

The Impervious Brick Co., of New Straitsville, Ohio, has just completed the erection of six new kilns at its plant at a cost of about $2,500 each. The plant now has 18 kilns in operation which will materially increase its output. John D. Martin is the superintendent and manager.

Superintendent Underwood, of the Hocking Valley Brick Co., of Logan, Ohio, reports a very good demand for brick and predicts an active season in 1913.

The Ohio Public Service Commission has issued an order for the Baltimore & Ohio Railroad Co. to build an inter switching track at Wooster, Ohio, to give shipping facilities to the Wooster Shale Brick Co. at that place.

J. M. Adams, general manager of the Iron Clay Brick Co., of Columbus, which operates a large factory at Shawnee, Ohio, reports a good demand for face brick. He says the car shortage is interfering some with shipments, but the Iron Clay Co. has not yet suffered to any great extent.

LAYTON, PA.

E. H. Bradley, of Layton, Pa., 73 years of age, writes that although he has only one leg to travel with, having been a brickmaker all his life, he takes great pleasure in visiting around among the brick plants at Layton, as he was instrumental in establishing all of them excepting that of the Perry Mfg. Co. He states that the brick business at Layton was never better and that while the Harbison-Walker Refractories Co. is rather short-handed, it expects soon to receive a consignment of colored help. The wage question is also an important factor with brickmakers at the present time. The paving brick plant of Bowman Bros. at Layton is being run to full capacity to fill their orders for paving brick before the season's end, but it now looks as though they would have to cancel some of their orders or enter the market as purchasers.

The Perry Mfg. Co. makes common brick, used principally in the coal mines for brattishing, as brick is cheaper for the purpose than either stone or concrete. Their plant, which was recently electrically equipped, has at present a capacity of about 40,000 per day, but if the kiln capacity were enlarged, they would be enabled to turn out 60,000 or 70,000.

The Kier Fire Brick Co. is running its plant over time and has reached the "ne plus ultra" in silica brick manufacture. The ground is being prepared for the addition of more kilns and an increase in the drying capacity. In the production of its brick, part mountain rock and part Layton rock are used.

The Old Diamond Brick Co. of the Soisson Fire Brick Co. is about to be placed in operation again, after being idle for a long time. Noah Miller has been selected as general manager and Noah should be able to make it go on silica brick, if anyone can.

There is under contemplation the erection of a large brick and clay plant at this place for the manufacture of all kinds of brick, furnace block, tile and sewer pipe, but as yet no definite information can be procured.

BUFFALO, N. Y.

Buffalo, N. Y., Oct. 10th.—Buffalo has been growing rapidly in the past few years and is now a city of over 400,000 people, and is looked upon as a large industrial center. The building here for the past year has been unusually heavy, amounting to about ten million dollars.

The brick business is in good shape and all the plants have been operating full time and are prosperous. The combined annual output of the common brick plants in Buffalo is estimated at from 60,000,000 to 75,000,000. A considerable quantity of face and front brick are made here and there is one sewer pipe factory with a large output. There is also a good sized pottery and a prosperous drain tile plant; some hollow brick are made but no terra cotta. Common brick sell for $6.50 to $7.00 per thousand.

Three of the plants here, use electric power and it has been a much discussed question among manufacturers as to whether coal is cheaper than electricity for producing power. Natural gas is cheap here but not sufficiently so to displace coal.

The use of paving brick and fireproofing has been growing, both having proven entirely satisfactory. The use of concrete, however, in many cases, has not proven satisfactory. One case in point is the handsome new building of the General Electric Co., where concrete flooring was used and it was so slow in drying that the construction work was much delayed, costing so much money that the company was sorry it had not used clay fireproofing.

Fail to Figure Depreciation Cost.

In talking with a brickmaker recently, he stated to the writer that, in his opinion, the ordinary brickmaker does not make as much money as he should, simply because he does not know how to figure. He gives no consideration to the ten per cent depreciation of the plant each year and fails to count in with the cost the interest on the investment, taxes, up-keep of wagons, horses, etc., which add heavily to the wrong side of the ledger. Very few brickmakers can tell exactly where they stand or how to figure on the cost or selling price of a commodity they have been making all their life. This is an important matter which can and should be studied out by each manufacturer and a cost system adopted to suit the individual requirements.

The contractors' association here demanded of the brickmakers that they should not sell brick to the property owner or private individual at the same price that the contractor pays. The contractor demanded a wholesale rate and that the consumer should be made to pay a retail rate. The contractor is the middle man and gets his brick for $6.50 to $7.00 and will probably charge the property owner at least a dollar more per thousand for handling the brick. The contractors won their point.

Buffalo is well situated, from a handling stand point. There are about a dozen railroads entering the city and it is the main eastern port on Lake Erie and the western terminal of the state barge canal on which the state is spending over 100 million dollars to put it in shape so that vessels from the other western lake ports can go on to New York City without reloading. Larger boats operated by steam or electric power will be used in place of the old out-of-date canal boat, drawn by mule. This will result in the reduction of freight rates and as the new locks will accommodate boats many times larger than those formerly used, it will enable the clay manufacturer to ship his product at a much reduced price. Between the canal and the Niagara river is a stretch of land eight miles in length that will make a great industrial center as soon as the canal is completed.

Brick are altogether too cheap here, the yard owners getting only $6.50 to $7.00.

Among the buildings recently erected here are the 17-story General Electric building, which cost $421,000; the 15-story Bell telephone building, costing $600,000; and the National gas building, costing $250,000.

Considerable business is done here with our Canadian neighbors in the way of shipments of brick-making machinery, on which a duty of 27½ per cent is charged. The Milton Pressed Brick Co. of Milton, Ont., recently purchased additional machinery of the Chisholm, Boyd & White Co., of Chicago, and will increase the output of its plant considerably.

H. J. Faulheber, who was formerly superintendent of the fire brick plant in Pennsylvania, is the new superintendent of the Lyth Tile Co., 666 Ellicott Square. There is another Lyth concern here, John Lyth & Sons, dealers in tile and sewer pipe, 48 W. Eagle St. They report that the building outlook is good and the sale of fireproofing materials, such as floor, arch and partition tiles is brisk. They consider future prospects bright and say that the drain tile demand is better here than ever before. The campaign conducted by the State Agricultural Department has influenced farmers all over the state to drain their land and as a result this firm has hard work to keep up with orders.

There is a marked tendency here to use clay fireproofing in preference to concrete. Vitrified clay building block are extensively used for the building of factories and garages as they are much cheaper than either concrete or cement block.

The Lancaster (N. Y.) Brick & Tile Co. is at present making considerable drain tile and hollow block.

The United States Sewer Pipe Co., Pittsburg, with offices at 512 Credential Bldg., states that prospects in the local field were never brighter and the company is having a big demand for medium and high price brick. It makes a splendid line of smooth face brick and also the noted Devonshire rough face brick, which is made from a fire clay, which produces an unusually attractive brick. They produce a wire-cut smooth face brick in many shades, which sell for $17.00, while the "Devonshires" bring $19.00, f. o. b. Buffalo. C. H. Ashen, who for twelve years has been the traveling salesman from the Buffalo office, has been made manager of the company. The plant, located at White Rock, Pa., is running full capacity and has an output of ten million per year. The company also manufactures flue lining, sewer pipe, wall coping and building block.

The Buffalo Builders Supply Co. of the Ellicott Square Building has installed a very fine exhibit, a small brick house, which is attracting a great deal of attention.

The Ostrander Fire Brick Co., of Troy, N. Y., will close its plant there and will, hereafter, take care of all orders at Ostrander, N. J., where it has a plant, near the big fire clay deposit at that point. An office will still be maintained in Troy, where the company has been located since 1848.

The Ellicott Brick Co. of 918 Ellicott Square, reports a good season. A Dennis continuous kiln, 130 ft. long, has recently been added to the plant, which is located at Loveland, near Jewettville, a suburb.

Drag and Lukens, dealers in clay materials, at 216 Ellicott St., have had a number of good contracts this year. They handle sewer pipe, flue lining and fire brick and expect to add a line of terra cotta.

Kilburn B. Clark, in the Erie County Savings Bank Bldg., who has for five years represented the Harbison-Walker Refractories Co. in New York state and Canada, will hereafter represent the General Refractories Co. and the Brighton Fire Brick Co., also.

The Queen City Brick Co. of the Builders' Exchange, handles the output of the Brush Brick Co., Henry Bender, John Dipschler, the Schisler Estate and the North Collins Brick Co., all manufacturers of common brick.

The Dunkirk (N. Y.) Brick & Tile Co. has two very good soft-mud brick plants here with a total annual output of six million brick. The new company, recently organized, is composed of S. M. Hamilton, of Buffalo, and R. W. Wright, Chas. E. Whelpton, Elton D. Warner and Walter E. Hilton, of Dunkirk. The company owns 30 acres of clay beds, but as the clay contains pebbles it must be screened carefully. Soft coal is used for burning but the kilns are being equipped for gas burning. They are making hollow brick but expect to put in machinery for the making of drain tile on a large scale. The Hiltons, interested in this company, control the Hilton Sanding Machine Co., of Dunkirk, which makes the well known Hilton mold sanding machine.

The Buffalo pottery, at Hayes Place and Seneca Street, is one of the most up-to-date potteries in the country for the making of fine china ware. The plant is busy the year around and there is always a steady demand for its large output of ware.

PENNSYLVANIA.

Pittsburg, Pa., October 23.—There is no denying the fact that the business of the Western Pennsylvania brick manufacturers during the last six months has been of record size. Here and there a manufacturer will reply when asked "how's business?" that "we are millions of brick back in our shipments, and it is not likely that we will catch up with our orders this year."

It is said, however, that the belated deliveries on current orders is caused mainly by the railroads being unable to furnish enough cars. The stocks in the yards are not extensive, and, in many cases, cars are being loaded direct from the kilns.

Sewer pipe manufacturers, and jobbers in this territory also assert that they are behind on orders, and the latter say it is hard to get sufficient stocks from the manufacturers. All in all, the brick and sewer pipe business with Western Pennsylvania manufacturers is all that could be expected in this era of prosperity. The plants will continue to operate throughout the balance of the year, or as long as weather conditions will permit. As a matter of fact, however, the more modern plants work without interruption throughout the entire year.

The paving brick and paving block manufacturers have been very active all season, but municipal work in the northern territory will soon have to be abated until the spring season of 1913. Of course, orders on file now will hold good until next year. During the winter season, ordinances are passed, authorizing municipal improvements with the opening of spring, and with these on the books, the paving brick and paving block manufacturers are assured of an increased volume of business for the coming year.

Building brick manufacturers have experienced a very active season, and the builders have the same complaint to make as has been heard in other lines, that it is hard to get brick on order specifications. This, of course, refers to time of deliveries. The result has been that construction work has been held up more or less throughout the late summer and early fall.

Fire Proofing Shown at Pittsburgh Exposition.

The National Fire Proofing Co. almost duplicated its Clay Products Exposition (Chicago) exhibit at the Pittsburgh Exposition which closed Oct. 19. A feature was made of the display of hollow tile for building purposes, although numerous other products of the company were also displayed in a very attractive manner.

Announcement has been made that a first mortgage of the National Fire Proofing Co. for $2,500,000 to the Union Trust Co., of this city, dated September 1, and executed Sept. 30, has been filed for record in the City Clerk's office at Boston, Mass. The company has an office at No. 120 Franklin street, Boston. The mortgage to the Pittsburgh bank is the largest, so it is reported, ever recorded in Boston, and as such breaks all New England records.

The Pennsylvania Fireproofing Co., of Erie, Pa., has started upon the construction of its new plant at St. Mary's, Pa. When completed about 75 people will be employed. It is reported that the company will manufacture brick and hollow tile.

Construction of the new kilns for the new shale brick plant at Royalton, which is being remodeled by B. Dawson Coleman, is rapidly nearing completion. When operating to capacity, this plant will employ nearly 100 men. It was placed in active operation Oct. 2.

At a meeting of the board of directors of the National Fire Proofing Co., a quarterly dividend of one per cent on the preferred stock was declared payable Oct. 15, to stock holders of record of Oct. 4.

A voluntary increase in wages of 20 cents per day was granted the employes of the brick plant near Uniontown, Pa., operated by H. A. Burchinal. The wages of a majority of the employes have been raised from $1.70 to $2 per diem, and others have received proportionate advances.

With a capital stock of $150,000 the Milton Brick Co., at Milton, Pa., has been formed. The firm will operate a building brick plant having a capacity of from 100,000 to 150,000 brick per day and will employ between 100 and 150 workmen. This company, noting the scarcity of labor, has sent representatives into different parts of the state with authority to hire workers.

S. M. Hoyer, formerly Mayor of Altoona, Pa., as president of the recently formed Cambria Clay Manufacturing Co., has announced that a number of important improvements will be made to the recently acquired property.

The shipments of brick from the plant of the Naticoke Brick Co., at Mifflinville, Pa., are said to have averaged 150,000 per diem during the last few months. The company is exceptionally busy, and recently booked some excellent business in Hazelton, Pa.

Charles McQuowa, of Punxsutawney, Pa., is offering a modern brick plant for sale, which is equipped, so it is reported, for the manufacturing of pavers and common brick.

Automatic dryers and carriers, costing upwards of $7,000 have been installed at the plant of the Diehl Pottery Co., at Rockhill, Pa. The company plans to manufacture 10,000 tiles per day. Three additional kilns are to be built and improvements are to be made in the boiler and engine rooms.

N. W. Ballantyne, who has charge of the Pittsburgh office of the West Virginia Fire Clay Co., reports an excellent volume of business on hand, both for clay and brick. The plants of this company are located in the Hancock County, West Virginia, territory, and they have not been closed for a single day during the summer.

Announcement has just been made that the Harbison-Walker Refractories Co., of this city, has concluded the purchase of a plot of ground at Wickboro, Pa., which included the baseball park at that point, the intent of the company being to erect a new brick plant there.

J. Parker B. Fiske, president of the Ridgway Brick Co., and who maintains offices in New York and Boston, together with Thomas W. Pierce, spent several days recently, at Ridgway, Pa., conferring with the local managers concerning the increasing of the capacity of the Ridgway brick plant. It is reported that the company wants to so increase operations, that the plant will turn out about one million brick per month. F. T. Owens is manager of the Ridgway plant.

In the selling market, normal conditions prevail, prices are remaining more or less firm, although the market is considered a "sellers" market. The demand is good, and some slight advances are being anticipated in some quarters, but no noticeable changes have been announced during the last fortnight.

CHICAGO.

Chicago, Ill., October 27.—Fire prevention day, the Ninth of October, was a memorable one in Chicago. It was the anniversary of the great fire, and the lessons learned then and since, have been the means of directing the attention of the public to the use of clay products as the best possible safeguard against fire. The further impress the importance of this fact upon the minds of the people, the Chicago Face Brick Association had a representative at the meeting in Orchestra Hall on that day to urge the increased use of brick in the crusade against fire.

This was a wise and timely move on the part of the association, which, with its customary energy and progressiveness, is planning a splendid display for the next Clay Products Show.

The intention of the organization this year being to educate the people as to the use of clay products rather than merely to show the varying styles of brick, as was the case last year. This is just what is needed—a demonstration of the advantages to be derived by using burned clay to build homes and business structures and the following out of this plan by all concerns will make the clay exposition an event that is in reality worth while and will at the same time make it possible for the clay men to reap a reward for their labors.

The demand for all classes of clay products here has been as brisk as could be hoped for, and the plants and agencies are all busy. The yards are all in active operation, and the demand for building brick, being a trifle less than during the earlier months, has made it possible to store away some brick for the early spring demand, so that the new year will not find them stripped, as was the case at the beginning of the present year.

Building activity has been steady. Numbers of large buildings are continually going up, and many factories, stores, apartments and residences and smaller structures are being built of clay products. Many down-town structures are planned for next year and all will call for more or less clay building materials.

Reports of car shortage are still heard, and the outlook in this regard seems to be somewhat serious, and it has already been the cause of some cancellation of orders.

There has been a fair demand for sewer pipe, particularly for the smaller sizes, and a shortage in these sizes is reported. The prices are said to be holding firm, and it is encouraging to note that according to indications there will be no reduction, soon, at any rate.

There is a continued increased call for terra cotta, and it has come to be looked upon as the most economical material for constructing business houses. The local plants are all very active, and the outlook for the next year for this material is fine. Face brick is in strong demand and the agencies are all doing a good business this fall and prices are good.

Out at the plant of the Carey Brick Co. another dryer is being installed. The waste heat system will be used and the dryer will have a capacity of 150,000 brick. The plant is still operating full, and the demand for brick is still brisk. Work will be continued until cold weather sets in. A great many brick are being shipped out, but some are being stored for early spring delivery.

Mr. Combs, at the Thomas Moulding Co., states that there is still a strong demand for face brick, and that the year has been one of fine opportunities throughout the industry, and there is a general feeling of satisfaction over business conditions.

The Midland Terra Cotta Co. has much to be thankful for as the demand for its products has been steadily increasing for months. There is still a very active business noted by this organization, and the number of large contracts on hand is the best indication of its success. High quality is the watchword with this organization.

Work of rebuilding the plant of the Clay Products Co., at Brazil, Ind., which was seriously damaged by fire several weeks ago, is being pushed forward rapidly. Mr. F. W. Darling is on the scene, and has been making the time count. The new plant will be constructed along new lines, and will consist of a series of one story buildings, of hollow tile with concrete roofs. The company has been able to continue filling orders, and has experienced little inconvenience in this respect. It is expected that the new plant will be ready for operation not later than the first of the year.

Thos. Connolly, the sewer pipe manufacturer, has inaugurated a new process for the manufacture of thirty-inch sewer pipe at the Streator, Ill., plant, with the result that the nature of the product has been much improved. He finds the demand for small pipe active, but there has been a shortage in the supply, of late. Car shortage has also had some effect on the business of this company.

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BRICK

and Clay Record

A Semi-Monthly Record of the World's Progress in Clayworking

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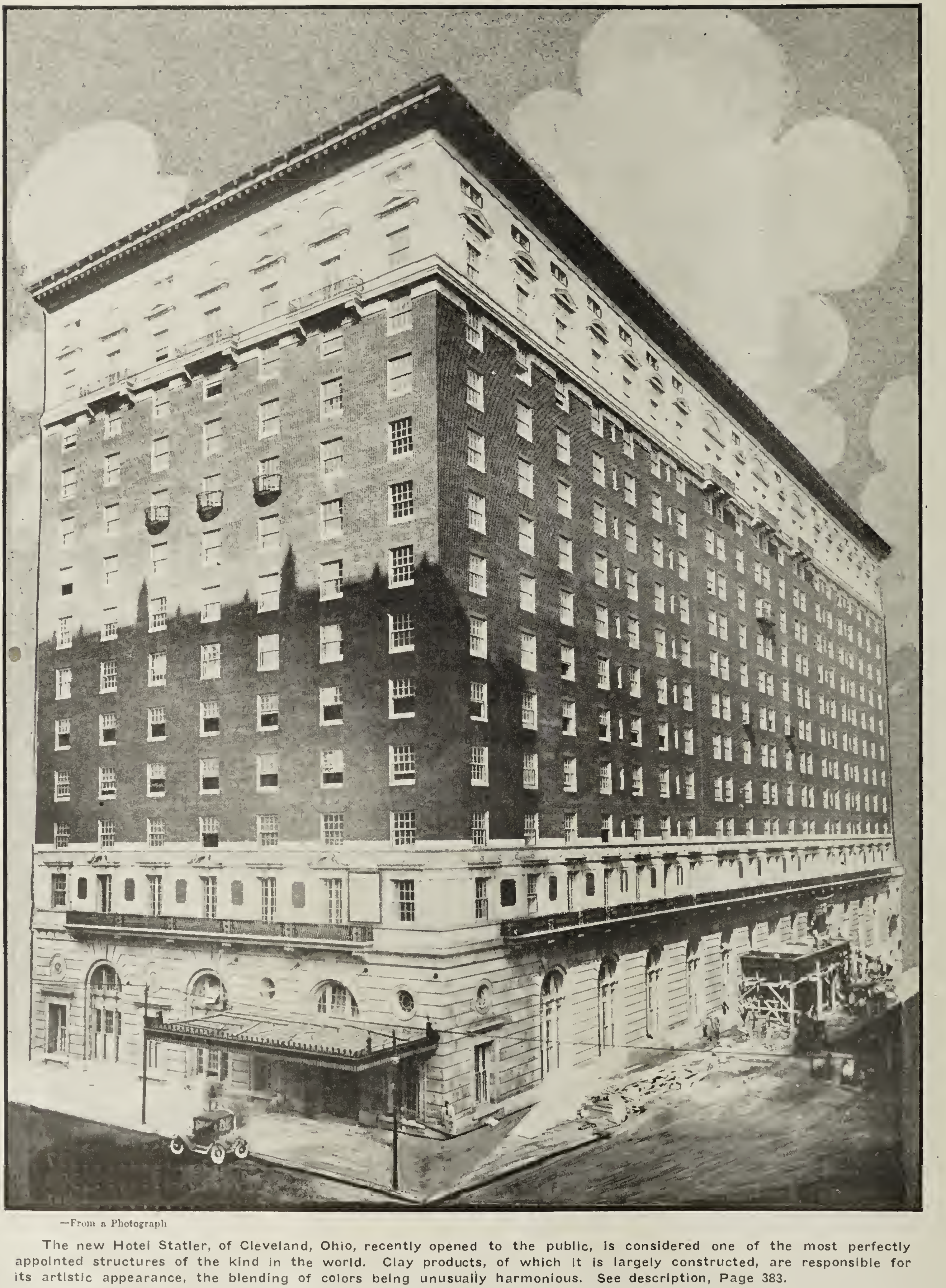
CLAY PRODUCTS USED IN WORLD'S IDEAL HOTEL



—From a Photograph

The new Hotel Statler, of Cleveland, Ohio, recently opened to the public, is considered one of the most perfectly appointed structures of the kind in the world. Clay products, of which it is largely constructed, are responsible for its artistic appearance, the blending of colors being unusually harmonious. See description, Page 383.

BRICK
and CLAY RECORD
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N. B. M. A. MEETS IN CHICAGO MARCH 3-7

Executive Committee Selects Date for Annual Convention Corresponding With That of the Clay Show to be Held in the Coliseum

NUTSHELL FACTS ABOUT SHOW AND CONVENTION.

CLAY PRODUCTS EXPOSITION—

Date—February 26 to March 8 Inclusive.
Place—Chicago, Coliseum Building.
Attendance—Estimated, 250,000.

NATIONAL BRICK MNFR'S. ASSO.—

Date—March 3 to March 7, Inclusive.
Place—Chicago, Congress Hotel.
Attendance—Estimated, 2,500.

THE twenty-seventh annual convention of the National Brick Manufacturers' Association will be held in Chicago March 3-7, 1913 during the last week of the Second Annual Show of the Clay Products Exposition at the Coliseum. The convention will be held at the Congress Hotel as it was last year.

The choice of Chicago as a meeting place and the date corresponding with that of the Clay Show was forecast by the sentiment expressed at the twenty-sixth annual convention held in this city last year, when at the last day's session a resolution was adopted declaring it to be the desire of the association to give its support to the Clay Show by holding the 1913 session here.

This final ratification of the resolution adopted at the last session affects every association in the clay product industry. Most of the larger organizations have gone on record as desiring to come to Chicago during the clay show and a few felt their support of the exposition was so urgent they adopted resolutions asking the N. B. M. A. not to reconsider its former action.

Only one of the larger national bodies has not definitely made known its decision to come to Chicago and this is the American Ceramic Society.

C. A. Bloomfield, Metuchen, N. J., President of The N. B. M. A.

Those that have gone on record as intending to hold their annual sessions here during the Clay Show are:

The National Paving Brick Association.
The Building Brick Association of America.
The National Clay Machinery Association.
The American Face Brick Association.
The Wisconsin Clayworker's Association.
The Western Paving Brick Association.
The International Clay Products Association.
The Illinois Clay Manufacturers' Association.
The Ohio Face Brick Association.

In addition to this list there are several other organizations that have not expressed their intention, presumably withholding action until some definite information as to the intention of the N. B. M. A. was obtained. These are:

The American Ceramic Society.
The Interstate Mantel & Tile Association.
The Terra Cotto Association.
The Iowa Brick & Tile Association.
The Canadian Clay Products Manufacturers' Association.
The Washington Clayworkers' Association.
The Northwestern Clay Association.

Many of the above associations will decide to come to Chicago, even to the state organizations.

Only a tentative programme has been arranged by the N. B. M. A. for 1913 but it is proposed to make it even stronger than last year, which is saying a great deal. The convention proper, of course, will be followed by the annual banquet, this being a long established precedent. The business sessions of the parent body will be arranged as they were last year so they will not conflict with those of the other associations.

The decision of the N. B. M. A. to come to Chicago means much to the Clay Products Exposition as it will bring thousands of clay manufacturers to the show that probably would hesitate attending otherwise.

Secretary Hopley of the Clay Products Exposition Co., encouraged by the action of the executive committee in ratifying the resolution to hold the annual meeting in Chicago during the show, has applied himself and his army of assistants to the work of the preliminary arrangements for the big event with renewed energy. An extra force of clerks and stenographers will be engaged shortly to send out the thousands of pieces of literature necessary for the proper distribution of information among the clay manufacturers as well as the public at large and the prediction is made, from advices received from all portions of the country and even from Europe that the Second Annual show will be far greater than last year's exposition.

Reservation for space by exhibitors is double the reservation at this time last year and the indications are that a greater display of manufactured clay products will be seen, several branches that were only slightly represented the first year planning to have full exhibits, notably the pottery interests.

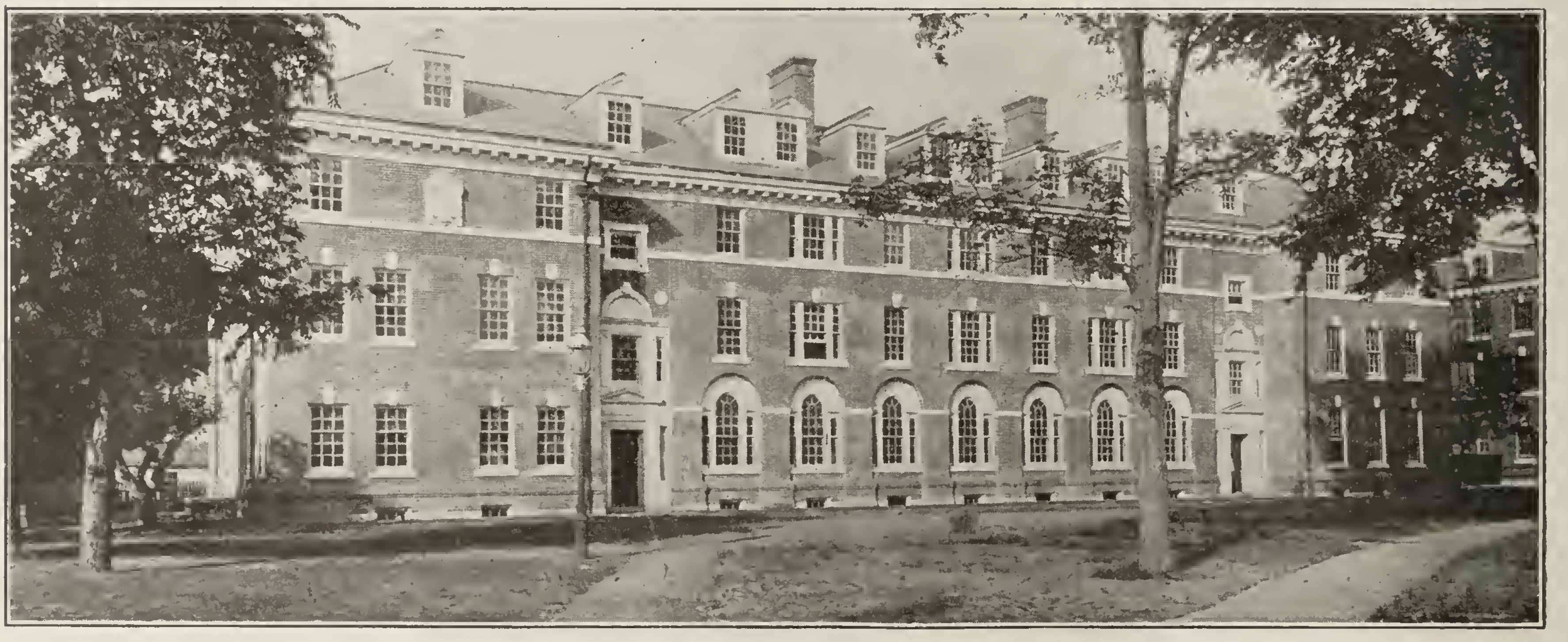
One of the lessons learned last year by the brickmakers alone and which will have a decided effect on bringing still more exhibitors to the show was the direct benefit many received in increasing their sales to dealers.

Dealers from every large city in the United States were in attendance and had their eyes open for "something special" in brick. Many of these made contracts with exhibitors for their entire season's output. One specific case is cited where one of the twenty-five Chicago dealers, who buys the product, and in some cases the entire output, of 165 different brick manufacturers in 29 states, closed deals with plants in states as far away as California.

Some dealers even went so far as to finance certain plants which made brick of a particular color or texture and guaranteeing to use the entire production. This appears to be not an uncommon practice among dealers and cases are known where concerns, attracted by a certain product of a plant of such small capacity as to be unable to supply the quantity desired, paid in advance for their orders to enable the manufacturer to have enough capital to install additional equipment.

Secretary Hopley expects the attendance this year to exceed that of last year by many thousands. It is estimated that there were 150,000 visitors that saw the first show. This year it is predicted that fully 250,000 will be in attendance.

USE OF COLONIAL STYLE ARCHITECTURE IN A SCHOOL



Webster Hall—Splendid New Brick Addition to the Exeter Academy, Exeter, N. H.

Webster Hall, as shown herewith, is a most desirable addition to the Phillips Academy at Exeter, N. H. Built of Exeter-made brick, under the direct supervision of J. J. Deveney of Nahant, Mass., it is a lasting and suitable monument to Daniel Webster, the Academy's most distinguished alumni and former trustee.

Half a million brick entered into the construction of the building, which is extremely massive and substantial in appearance. The vestibules are floored with brick and clay products in various forms figure in the interior and exterior of this building, which is one of the most attractive of the academy group.

JOURNALIST DISCUSSES BRICKMAKING

Visit to Plant of Lonyo Brick Co. at Detroit, Furnishes Theme For Newspaper Article—Writer Describes Preparation of Clay For Use in Noble Edifices

Modern methods of brickmaking are a revelation to the layman, who suddenly awakes to the fact that brickmaking is a science in itself. This fact is being recognized by the press as shown by the following article, which appeared in the Detroit Tribune.

By GEORGE C. SHEFFIELD

ONE phase of industrial Detroit which is probably more intimately associated with the real growth of the city than any other is the manufacture of brick. The brick is an article which figures prominently in every part of our modern life. It is indispensable in building, and is a characteristic weapon of mobs. One finds brick in the pavement under his feet, and in the arches over his head. Truly, the brick is a very cosmopolitan product.

Yet it is quite possible that thousands of people living right in our cities do not know where the brick come from. If you have entered or left Detroit, on the Michigan Central or the Pere Marquette railroads, did it ever enter your mind that the long rambling sheds out near the western city limits were the home of one of Detroit's most important industries? That is exactly the case. Group after group of large straggling buildings mark the area taken up by by the important business of brick making.

Perhaps you would like to visit one of these plants at some future time, to investigate for yourself the how and why of making brick. When you go, don't look for fine buildings and beautiful grounds, for they will not be there. The business of making brick isn't one which demands modern buildings, and in spite of the great number of brick made annually by the various companies, very few brick find their way into buildings used by the brickmakers themselves. With the exception of the machines, which demand more careful housing, most of the work is of a nature which calls for plenty of air and sunlight.

The making of brick is not a new industry by any means. In fact, it is one of the oldest, for history shows that the ancient dwellers of Babylon, Greece and Egypt were experts in the manufacture and use of the sun-dried clay. The article is as old as civilization, and only the machinery has been changed. Where the Romans molded their clay by hand and allowed it to dry in the sun for from two to five years, the modern brickmaker can turn out a finished brick in a short time, thanks to machinery and the use of kilns for burning the product.

No Romance About Brickmaking.

To start at the very beginning, it is necessary to go to the clay pits. Nothing very romantic about them, you will say. No, that's so, and still not every kind of clay can be used to make brick. It must be free from stones and pebbles, cannot have too much sand, must be the sort which works up well into a sticky mass, technically known as plastic. A plastic clay is the kind which rolls up on the carriage wheels when the country is visited by a shower. The farmers and autoists do not call it "plastic;" they use a much stronger term.

All the brick plants in Detroit are located close together. There seems to be a belt of clay in that locality which just meets the requirements for making brick. Out at the western limits there are acres and acres of land which would gladden the heart of the brick-clay seeker. These fields lie empty and barren, and will remain so until the last shovelful of valuable clay has been removed, a process which bids fair to occupy many years.

Out in the center of these barrens are the pits. Modern engineering has supplied railway tracks which run to all parts of the clay beds. On these tracks are pulled and pushed the cars which carry the clay up to the machines. Horse power is in use but steam, gasoline and electric engines are used at many plants. A car is wheeled near a gang of men with shovels, and in a short time it is filled with clay, a man with a horse comes along, hooks on to the car, and the clay is started on its journey. Over half a mile of hot, sun-beaten track it goes, finally stopping at the base of an incline leading to the shed in which are the machines. A long cable, with a hook on the end of it, is attached to the car and a steam winch pulls it up into the top of the shed.

A workman is ready, who dumps the car, and the clay slides into a mammoth hopper. Now comes a process which reminds one of the workings of a gigantic sausage mill. At the base of the hopper is a long trough, in which an auger is constantly turning. As the clay falls into this place, it is met by a stream of water, which softens it and increases its "plasticity," making it easier to work. The auger kneads the clay, mixes it thoroughly with the water, and the spiral screw gradually forces the material out and into another auger box where it is mixed still more. At last it drops into the machine which is to give it the final shaping.

The Molding Process.

The man at the sand box grasps a mold, which is nothing more than a long box, partitioned in such a way as to give form to six brick. It is damp, from contact with the clay, and a few shovelsful of sand are dumped into it. When the mold is turned over, some of the sand sticks to it. The box is then pushed under the machine, and the process is repeated indefinitely.

When the box is in place, the plunger in the machine executes a downward movement, and in that one motion a mold is filled. The plunger rises, the mold is pushed out on a table, more clay enters the machine, a new box is shoved into place and again the plunger decends. All this happens in much less time than is consumed in the telling of it. And all the while more clay is being supplied from the giant hopper up near the roof.

When the molds slide out on the table, the man who stands waiting for them quickly pushes a trowel over the surface. This removes the extra clay which was left there by the plunger, and makes the brick smooth on all four sides. Picking up the mold by handles at each end, he quickly and deftly transfers the brick to a board on the rotating table, and tosses the empty molds to the man at the sand box.

VIEWS OF LONYO BRICK COMPANY'S DETROIT PLANT

Near the rotating table are the men with the trucks. The trucks for wheeling away the brick consist of two high wheels, surmounted by a light wooden frame, with springs for lessening the jar of transit. The men take their proper turns, and as the molds are emptied on the table, the men whose turn it is, pick up the pallets containing the brick and place them on carts. Ten pallets make a load, and as fast as the carts are loaded they are wheeled to the drying racks.

Women Turn the Brick.

These racks are the biggest thing about the plants, at least in point of space occupied. Every plant has rows and rows of them in long, narrow buildings. Here the brick remain for varying lengths of time, depending on the weather. And here, also, is another industry in which women have found a place. When the brick come from the molds they are laid flat on the boards. This is not the best way for them to dry, so it is necessary for them to be turned up on edge. This work is easy, and can be done as well by women as men. Indeed, the women probably do it better, for they walk rapidly down the aisles between racks, turning up brick with both hands. It is not unusual to find entire families working in the plants during the summer months.

After the brick have air-dried sufficiently, they are ready to be built into stacks for the burning. Here, real skill is needed. An experienced stacker has all the grace of a juggler, and much of the skill. The stacks are started from the ground, and the furnaces are built in as the stack progresses. Men with wheelbarrows hurry back and forth from the yards, and as the stack rises, they toss the brick up to the man above. The man on the ground picks up four brick, gives them a light toss, and the "man higher up" catches them without the least trouble. Seemingly without effort, he grasps the brick in the proper position and lays them in place with hardly a glance. His fingers appear to have been trained to act automatically. The men laugh and talk with one another while the work is going on, and still a clever man can stack 36,000 brick in six hours. That means a continuous speed of 100 per minute.

When a stack is completed it forms a pile approximately 30 feet wide, 20 feet high, and perhaps 100 feet in length. About the whole surface of the stack a wall is built, composed of old brick plastered over with a coat of cement. This forms a sort of furnace or oven and helps retain the heat. Every few feet a tunnel runs under the pile from side to side, and it is in these tunnels or ovens that the firing is done.

Oil Burning Used.

One of the modern methods of burning brick is by the use of oil or gas. One of the illustrations shows the jets through which the oil is forced into the furnace. One of these jets is located at each end of each tunnel, and the heat generated is said to be terrific. After the fires are started they are kept going constantly for seven days and nights. A man is kept on watch all the time to see that nothing goes amiss with the fires, for a short cooling would ruin the whole lot. When the brick at the top show red hot, they are considered "done." The stack is allowed to cool, after which the walls are torn down and the pile is picked apart, the brick being hauled to the places where builders are impatiently awaiting them.

The number of brick produced in Detroit in a single year is almost staggering. Absolute figures are hard to get, but men who know, estimate the total output at between 150,000,000 and 175,000,000. And this does not include any but the common variety used for inside walls, etc., no fancy brick, no paving brick, just the plain old brick for every-day use.

HOW NEWLY-WED WAS WON TO USE BRICK

His Experience, However, Proves That the Prospective Home-Builder Has to Seek Information and Often Times What He Gets Is Discouraging

The following interesting story is the actual experience of a young man who started out to select the material for a little home he expected to build next spring.

The writer, lured by the generous publicity of the cement man and the lumber man, had about decided to use one of these materials when some one suggested brick and directed him to come to the editor of this publication for data.

Seeing an opportunity to learn just how the brick dealer and manufacturer handled a case like this, the editor suggested that Mr. Royse visit the various Chicago brick men and *state his case to them.*

Mr. Royse, as he subsequently confessed, started out with little heart in the matter. He was won to brick, but strange to say he claims that it was the concrete fellow and the lumberman that convinced him and not the brick man.

By WALTER E. ROYSE

WE—Jane and I, are going to build a home—just an unpretentious, cozy, modern bungalow, commodious enough for two, or maybe three, with vines climbing up the walls and a big, open, cheery fireplace within, where we can sit together in the long winter evenings.

This decision of ours came on the occasion of two very important events in our lives—our second wedding anniversary and the twenty-third monthly anniversary of our first "rent-day."

The subject of building came up when my wife reminded me that a lot we had begun paying on a year before would soon be ours.

"We will build our home in the spring," she said, speaking as calmly as if she were announcing dinner.

We had intended to own our home. This is the dream of every newly-married couple. However, I did not believe we were financially strong enough to build so soon, and I very timidly called her attention to that point.

"We need a home most of all," my wife persisted. I nodded my head in approval. There was a moment's pause and I waited patiently for I could see she was giving the subject serious consideration. Presently, she looked up. "We'll build," she said. There was such finality in her tone I knew it was useless to argue, so I assented.

They Investigate Building Materials.

"First of all we must decide on the material," she hurried to add, and before I knew it I had out my pencil and was beginning to figure. We never had considered that question. Afterward we learned that few persons do.

"Stucco is advertised in all the magazines; the homes are beautiful, and they don't cost so much," she informed me.

"Yes," I agreed, "but lumber makes a good substantial home. Building a home is a big undertaking. I propose to investigate building materials thoroughly."

"Our home," interposed my wife, clapping her hands joyously, "must be like those in the old fashioned love stories in which the couples 'lived happy ever after'."

My wife was enthusiastic. I was serious.

"Stucco is the Twentieth Century building material," concrete agents informed me. "It is less expensive than other materials and 'just as good as brick.' It makes up easier and prettier, and as a result of nation-wide advertising it is in great demand. Concrete is getting a firm grip on the American building public. Statistics show the tremendous strides this material has made and is making over competitive materials."

Surely these arguments were sound. Concrete undoubtedly was the material for us.

Lumber men pointed out that most of the buildings in the United States are built of wood. They said wood was "just as good as brick."

Arguments of these agents—concrete and lumber, made an impression on me and my wife as well. Besides, the pamphlets and other free material on the merits of the building materials—and we had enough to keep the fireplace in our home-to-be burning a week, corroborated their arguments and elaborated on them.

We were undecided.

Find First Reason for Brick in Enemy's Camp.

"Why," I asked my wife, "do concrete and lumber agents continually refer to brick? I asked no questions about burned clay yet they said 'our material'—concrete or lumber—'is just as good as brick' or 'it is less expensive than brick'."

I interrogated concrete and lumber men alike.

"Do you consider brick the best though, perhaps, somewhat prohibitive in price?" I asked them. "Is brick the accepted standard of building materials?"

Their answers were evasive. One said:

"In years past brick was generally conceded to be the best material for building—the most expensive but the most substantial, but that time is now past."

Building materials now interested us deeply.

One day a friend suggested burned clay. We had such a fund of information on other materials we doubted his arguments, but he persisted.

"Go over to the offices of 'Brick and Clay Record,'" he said when he saw my indecision, "and lay the whole matter before them. They'll put you on the right track."

This I did. "Brick and Clay Record" gave me a fresh load of pamphlets, among them a book of 100 bungalows of brick; a copy of "The Cost of a House," a comparison of brick, wood, cement and hollow tile construction, and other materials. I and my wife absorbed much of this newly acquired information.

I decided to canvass various brick concerns as I had the concrete and lumber manufacturers. The results of this canvass were interesting, but for obvious reasons I have omitted actual names.

No. 1. When I entered the first office I stated simply the object of my visit. I told them that I was about to build a $3,500 bungalow and was anxious to get a line on building materials. The young man smiled and led me to the display room.

"Use brick by all means," he began.

"Why?" I demanded, pointedly.

"Well," he said, "builders only try stucco once. It won't last; it is lifeless; it requires constant repairing."

"Brick is too expensive," I suggested to draw him out.

"It does cost more but it is worth it," he replied.

Blames Cement Publicity for Brick's Poor Showing.

"Statistics show concrete has gained over brick. Can you explain that?"

The young man looked at me nonplussed.

"Do they show that?"

I nodded assent.

"Well, you see brick men have not been pushing burned clay like the concrete men have been urging their material on the public through advertising; instead we have been content to let the brick business boost itself." Satisfied with his progress he continued. "There always has been a certain amount of building and brick gets its share. Understand they are going to stir things up."

A man puffing a big thick black cigar came into the room and interrupted, saying:

"You will find the arguments in favor of brick. A brick house stands forever. The same is not true of houses built of other materials. They simply will not stand the weather."

The young salesman had not made these arguments but he agreed with the speaker.

He dug deep into a dark corner drawer of a desk and after rummaging about drew forth a dust-covered pamphlet and passing it to me, said:

"Read this; it will show you."

He led me to the door, saying:

"You see I am going to get married soon and we intend building a home. I am going to use brick."

I was still in doubt. I consulted my list and found another dealer next door in the same office building.

No. 2. "I wish to speak with someone who can tell me about brick. I intend building a home," I announced to the stenographer, the sole occupant of the office at 3 o'clock in the afternoon.

"He is out," she said quite indifferently, yawning and stretching her arms.

"Do you expect someone in soon?"

"Don't know. No one's here now but me. You'll have to see him."

Just who "him" might be I never knew.

No. 3. A man at this place wearing colored glasses, tan gloves and hat and seated at a desk said in answer to a query as to the relative merits of brick and concrete:

"Oh, brick is the best. It's like comparing an expensive hat of good make with one that's cheap."

He volunteered no further information. He did not even stir in his seat. Apparently he did not wish to debate the subject. He did not offer any literature to argue for him.

Runs Into a Real Brick Salesman.

No. 4. I waited twenty minutes here but the results were worth it. When the young man finally finished waiting on a customer he pleasantly inquired the object of my visit. He was interested in me immediately.

"So many persons use concrete for building because it is extensively advertised and for the further reason that it is 'something new'—a fad and 'just as good as brick.' "

He repeated briefly every reason I had heard or read in favor of brick, adding:

"Brick is waterproof, other materials are not. Stucco costs less to begin with but more in the end and is not so satisfactory."

Apparently he was not only a good salesman but an expert on brick. He concluded that I should use brick that would cost $13.45 a thousand. When I turned to go he gave me an arm load of pamphlets that I found to be elaborations of his arguments.

Now, I was beginning to believe brick was after all the best material. However, every argument I had heard in favor of brick was attacked by the next man with whom I talked.

No. 5. A man past middle age sat at the desk of the sales manager in this office. He confidentally informed me that "stucco is just as good as brick" and actually urged me to use concrete instead of burned clay because it would "give satisfaction," he said.

"Build of stucco," the brick sales manager urged. "You will never regret it. Out in Evanston where I live I have noticed a number of stucco homes. They have lasted years and are apparently as good as new.

"Stucco stands the weather. A stucco house is salable after five or ten years. You will not want to live in your house all your life. Stucco makes warm houses and while they crack at times they are easily and cheaply repaired. I am in the brick business. I know what I am saying."

I was unprepared to hear such statements from a man in the brick business and now I was more in doubt than ever.

No. 6. I listened to much of the same line of argument here as I had heard in other places I visited. I was told that the low cost of common brick was one reason why a home such as we planned should be built of clay products. Brick, it was argued, were best, lasted longer, cost but little more, were fireproof and altogether the most desirable.

This Man Had a Lazy Streak.

No. 7. After I had briefly outlined the object of my visit the man in charge at this place said quite cheerfully:

"Well, there is always an argument when this subject (meaning the merits of brick over other building materials) is broached. I can give you many reasons to prove to you that brick is the only material worthy of your consideration but I have an easier way of doing it."

He smilingly handed me a supply of literature and I departed.

No. 8. No sooner had I announced my reason for calling than the man in charge here, showing marked interest in my case, began a line of argument in favor of brick as a building material that covered everything I had learned up to date. In the end he handed me a generous bunch of pamphlets and urged me to study them. He seemed "wide awake" and anxious to explain away any doubts I might have on the building material question.

No. 9. I stated my case fully at this place and my reward was a generous fund of information on the subject of building materials. This concern deals in lime and cement, yet I found those in charge fully informed on the subject of brick.

No. 10. I gained much information from this concern

(Continued on page 398)

RECENT DEVELOPMENTS IN FIRE BRICK

This Expert Says Marked Growth Is Due to Progress in Metallurgy—Improvement Is Noted in Physical Properties

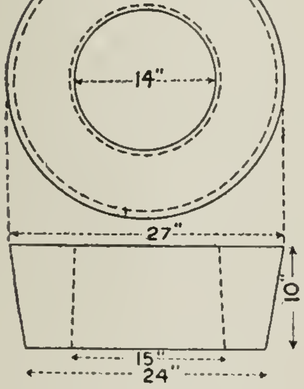
The fire brick industry is so closely allied to that of steel as to make their interests largely mutual. Though the demand for refractories has increased enormously in the past 25 years, the manufacturers anticipating the wants have been able to meet all requirements—one firm alone producing over one million refractories per day.

By **F. T. HAVARD**
Professor of Metallurgy, University of Wis., Madison, Wis.

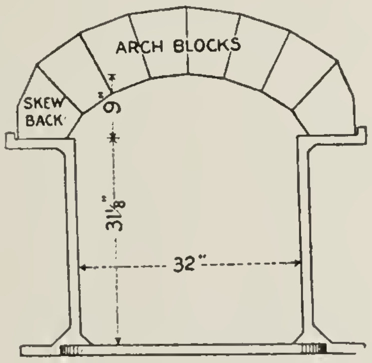
ALTHOUGH the art of the potter and the knowledge of the chemist and geologist have united to develop the ceramic industry, perhaps the combination of these with the skill of the mason has been most effective in promoting progress in the preparation of refractories, which have supplied the sinews of war to the furnace men in the extraordinary changes which have been made in recent years in the science of metallurgy.

During the middle ages, the furnace operator was at the same time the worker in clays, a potter of no mean skill, who had considerable intelligence in the selection and application of refractory materials. Agricola describes the methods used in preparing fire clay retorts and crucibles, and the practice in constructing furnaces in the middle ages. The clay was pugged, thrown by hand, dried and burnt by wood fires. The furnaces in his day were similar to many used at the present time in Europe, in which the movable roof, made of nicely fitted tiles to form an arch inside a round angle iron band, superimposed the hearth made of tamped bone ash, marl, silica or some other refractory material.

The use of kaolin to make porcelain also helped the chemist, who gained a lively appreciation of the qualities of the purer clays. His acquaintance with bone ash, carbon, plumbago and wrought iron anteceded that with silica, while he rapidly becomes conversant, through experiment, with the properties of bauxite, magnesia, dolomite and marl. It is only within quite recent time that the use of chromite, steatite, and the various artificial refractories has developed.



Oven Ring



Oven Door

Refractories Closely Related to Metallurgy.

The developments within the past few years have been most marked. Thirty years ago the refractories industry in the United States produced products to the value of $400,000 a year. Now their value is between fifteen and twenty million dollars. This is altogether due to the progress made in the metallurgical industry. The wealth arising from this industry would have been impossible of realization had it not been for the energy of the refractory makers in supplying durable materials to stand severe physical and chemical strain. In 1820 a blast furnace made eighty tons of iron a week, in 1860 about that much per day. Now it makes 500 tons daily. In 1880 a copper furnace would smelt twenty to thirty tons of ore per day; now it handles as much as two thousand. Coke oven, blast furnace and cement kiln developments are only a few of a similar character. The refractories industry has amply proved its ability to cope with these new demands. One firm alone produces over one million refractory brick a day. There are about 400,000 silica and 50,000 magnesia brick produced daily in the country.

Stove Pipe Fittings and Chimney Tops.

It is not only in quantity but also in quality that the refractories industry has met the demands made on it by the enormous furnaces, stoves and ovens. And to its credit, it has generally been first in anticipating these wants and has frequently educated the operators in the requirements of good, modern practice.

Refractories Improved in a Physical Sense.

Yet no remarkable change has been made in the character of the raw material used, nor yet in the principle of the methods of manufacture. The Americans have improved in a physical sense the refractory products, their good chemical properties were well known nearly a hundred years ago. We still use fire clay brick. We have improved it for some purposes by increasing the alumina percentage to 60 and 70, such as is contained in "Alusil" brick recommended for rotary cement kilns. But in the preparation of silica, magnesia, chromite, graphite and the artificial refractories, we have achieved signal progress.

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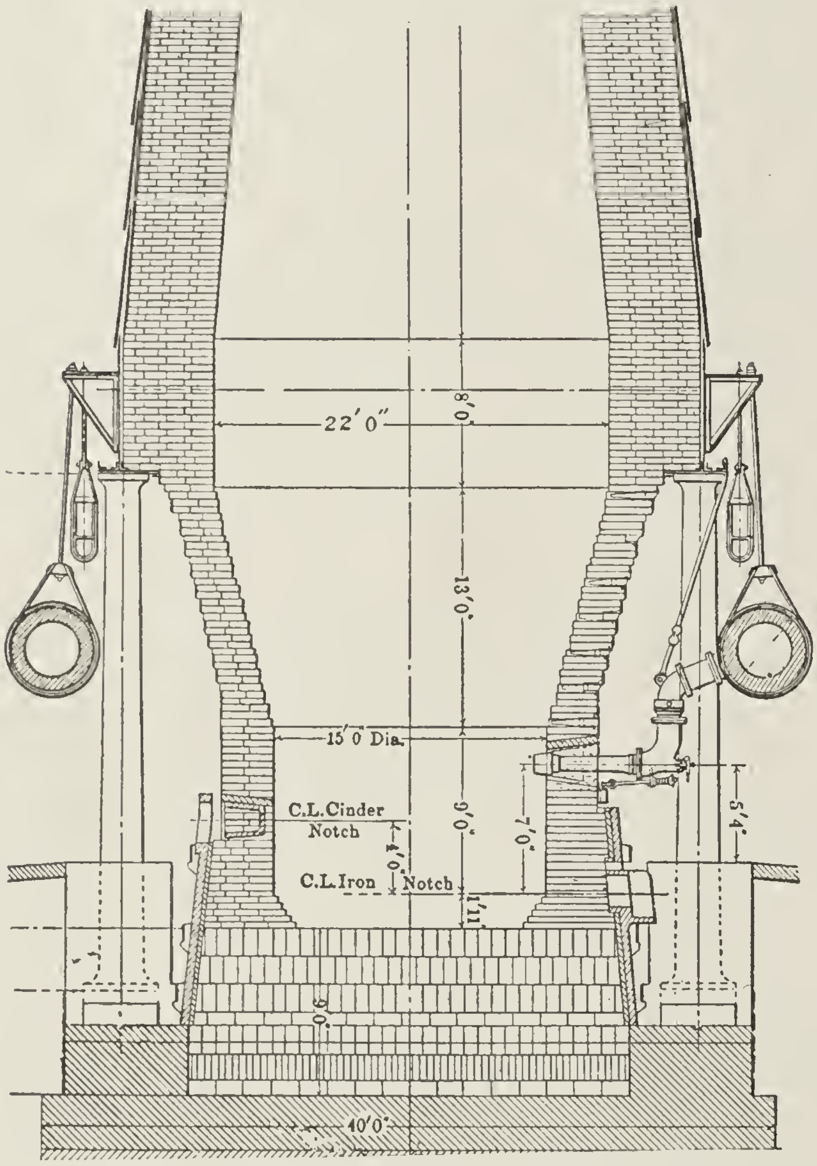
* From Vol. XIV, Transactions of the American Ceramic Society.

Unfortunately, as the industry developed there arose a confusion of names applied to the silicious refractories. The name Dinas was first used in the beginning of the 19th century by Mr. Weston Young, who worked the silicious materials in the Dinasfels in Wales into brick with the aid of the underlying cretaceous lime. The Young family kept the process a secret until the middle of the century. During this time another kind of silicious brick was being made by grinding and mixing the gannister rock of Sheffield with clay. The name "Gannister" is still generally applied in England to such silicious material bonded with clay. Germans commenced the manufacture somewhat later of the clay-bonded silica brick and called it "German Dinas" and advanced its superior qualities as a competitor with the imported English Dinas. When American industry called for acid furnace linings, brick and mass of the composition of the English gannister were marketed under the name of "Quartzite;" the word "gannister" was restricted to the second class silicious material, won in sandstone and quartz quarries, which was bonded with clay and used in lining converters. The Americans have never used the term Dinas. The first-class silica brick with lime bond is called silica. It would be an advantage to the industry if the terms were standardized. We might comprehend under "silica," brick with approximately 96 per cent silica and 2 per cent lime; under "gannister," a mass with about 80 per cent silica and 20 per cent fire clay; under quartzite, brick with between 70 and 80 per cent silica, and reserve the name "Dinas" to the peculiar brick of principally historic interest made from such formations of silica and lime as those of the Dinasfels. At the present time we have more names than distinctions in silicious materials, since Dinas and silica on the one hand, and gannister, quartzite and German Dinas on the other, comprehend the same meaning.



A Modern Blast Furnace Lined with Fire Brick.

Lime Necessary to the Mixture.

In the manufacture of silica brick, the leading American refractory brick makers have obtained the best results in the use of sedimentary sandstones and quartzites containing about 97 per cent silica; these, when ground and tempered with less than 2 per cent of clay, burn into a brick of uncommon properties. At the present time there are two cheap sources of this raw material (in Wisconsin and Pennsylvania), in both of which the silica averages 97 per cent and is supplemented by alumina and ferrous and ferric iron. Attempts have been made to use pure quarzite with 99 per cent silica, but without conspicuous success. It would appear that the impurities when totaling less than 3 per cent and containing not more than 1 to 1½ per cent of oxides of iron, strengthened the brick by the formation of incipient slag particles. The lime is necessary to hold the silica together during the processes of moulding, drying and burning; and it probably acts as a fluxing agent at the high temperature of burning, cementing the silica particles together. There is no appearance of fluxing in the fracture of the brick, which is dry and homogeneous. The slag particles are, however, only in an incipient stage of formation but are sufficiently active to act as a bond. The physical properties of the rock play an important role. Sand may not be used because the particles are round and do not interlock and fail to make a cohesive strong bonded brick. Rock which grinds into splinters, which overlap and interlock, forms a satisfactory brick and is always preferred to a material however pure which is or grinds into a granular condition.

The silica brick have a wide use in the construction of by-product and bee-hive coke ovens, in open hearth furnaces, in the glass, iron, copper and melting business. Their physical properties of regular expansion and heat diffusivity have endeared them to modern furnace builders who do not require basic materials.

Progress in Use of Magnesia.

Not less remarkable has been the progress in the use of magnesia in furnace work. Five years ago no copper converter was lined with any material other than gannister. Ten years ago there were but a few basis-lined, open hearth furnaces.

Magnesia or burnt magnesite has in recent years been replacing the old standard dolomite. Magnesia is generally used in the form of brick, while burnt dolomite was used as mass. The highly refractory qualities of magnesite were realized as far back as 1870, but effort after effort to use it was frustrated on account of the poor physical properties of the burnt mass and brick. It is only in comparatively recent years that we have developed the art of making these burnt brick firm and sufficiently tenacious to stand pressure when hot. The magnesite to be refractory must be low in iron, silica and alumina, and yet may not be pure. The deposits which are sufficiently pure to use in furnaces where the highest

(Continued on page 396)

PUTTING EFFICIENCY INTO SELLING END

How the Senior Deadun Came to Retire Suddenly—The Sequel of Another Business Stunt Put Across by the Hustling Brick Dealer, E. N. Terprise

This is the second of a series of salesmanship articles by Mr. Beals and takes up another phase of E. N. Terprise's successful methods in fighting his competitors.

By ALLEN E. BEALS

WHEN Deadun & Company's telephone bell rang, Deadun, Jr. laid down his current expense account the bookkeeper had just handed him and picked up the receiver.

"What's that!"

The tone the Junior Deadun used brought every office employe and salesman in the outer office to attention. They heard the vicious click of the receiver, as it was put back into place and also some very acrid remarks about somebody being a thieving scoundrel, a cut-throat, a price-cutter, a grafter and of possessing in general most of the attributes that go to make up an "undesirable citizen."

At the same time McManus, the star brick-salesman of the house, burst through the office door and passed through to the young boss's office.

"They beat us," he grunted to his fellow employes.

Down at Hart's wharf a different scene was being enacted. E. N. Terprise turned to his general salesmanager when he received word that he had been awarded the contract for brick for the big county courthouse and jail and said:

"Miss Brown, please take this letter." Briefly he directed his No. 1 yard manager to cull the brick in shed and load barges to be ready for immediate shipment.

Picked Century-old Plum.

"We've beat Deadun and taken their half-century-old plum," he said in a matter-of-fact, though complacent way, without even turning to address his general manager, "and we cannot afford to be tricked by the contractors into some impossible delivery trap. We'll be prepared for whatever turns up."

Deadun always had been a generous contributor to the campaign fund of the county machine. He even controlled appointments in some important departments of the county government where brick or general building supplies were likely to be a factor. So it was natural that, in the course of time, that machine should take upon itself some of the characteristics of a phonograph and suddenly call vociferously for Charlie Deadun, the younger member of the house of Deadun & Company, to run for Congress and it was not at all surprising that he was elected.

Neither was it surprising that the son of R. McGeddon, the biggest contracting firm in the county should sue for and win the hand, with the smiling and even happy consent of the founder of the old building material supply house, of Deadun & Company, of no less a personage than the fair Miss Deadun herself.

The next day the papers carried headlines screaming the fact that the right wing of the political cohorts of the county had been outbidden and defeated by his younger rival, the enterprising company, the reader will recall, that ran its electric trucks all night to save a general tie-up of building operations when the big strike occurred a year or two before.

That night at the Deadun's dinner table the older and younger male members of the family sat long over their cigars.

Billy's Record as a "Live Wire."

Down at Princeton, student history shows to this day that Billy Deadun did more to put ginger into the "noughty-nought-nine" than any other Tiger this side of the days of O'Toole. The story of how the iron ball swung around the diamond clipping off an incompetent here and a non-confident there, to the end that the Orange and Black were carried high to victory, is still hearth-fire and tap-room gossip to this day.

The captain of the team, who was called down so unmercifully by Billy Deadun, was threatened with being fired from the team unless he could hold a pop-fly better than he did, subsequently took him on to help build up a foundation-digging and caisson construction business.

Billy always did have a bump of order, system and efficiency. He put some ginger and a good proportion of common sense plus a little ingenuity into the art and science of digging big holes into the face of this mundane sphere and ended in putting his company into the foremost rank as foundation-setters in the country.

"Charlie," the elder Deadun was saying to Deadun, Jr., "I do not understand it. There must be something wrong somewhere."

"Somebody has grafted," was the reply of the son.

The county clerk, county engineer, general supervisor of public works, and R. McGeddon, the contractor, who because of popular clamor, had had to come for his materials into the open market through the regularly elected county officials on bids, as well as the president of the board of supervisors—all machine men, came to the house of the unsuccessful bidder to explain how it happened. It was a clear case of lowest bidder.

"I think we'd better put Billy to work here and let me retire," said the older man as he left the room to see his guests. "You two boys could stop this thing, I'm thinking."

But it was more of a mumble than articulate speech and Deadun, Jr. did not hear it.

"Have you seen tonight's paper?" asked the county engineer. "E. N. Terprise is advertising his bidding figure in a big display ad. The contract had to go to him because he underbid you at a good round figure. What could we do about it?"

E. N. Terprise's Publicity Methods.

E. N. Terprise was in business to sell brick. When he found that a strike was in his way, he saw to it that if the contractors using his brick wanted to work strikebreakers he would have brick enough on hand to keep the contractor supplied and not be tied up because of cut harness, battered truck drivers and brick dumped overboard or some place in the public streets a mile or two from the job.

When his brick plant burned down he bought and culled brick from another yard, the reserve output of which he bought outright until he could rebuild, even though his profits ranged from meagre to nought and when he found the people of his country aroused against bossism and ring political control he proceeded to capitalize it and help the people on their way to get representation.

So on the very afternoon that the bids were to be opened he had inserted in the 3 o'clock edition a large advertisement containing an exact duplicate of his bid to the county courthouse board. The bids were to be opened at 2:30 and he learned that the paper's first evening editions would not be on the streets until 2:45. He was safe from any technical violation of the law because while the advertisement for the bid called for sealed tenders, they would be opened before the papers reached circulation.

He called attention to the fact that his bid was low and why he could make a low figure and yet provide good brick for the courthouse.

Further, he demanded in his advertisement that the people who believed in representative government—not special privilege, stand behind him. He knew his ground because the campaign had been a hot one. The people were opposed to a courthouse on the ground that they were already taxed too high, but the ring had forced one on them to cost, not $1,000,000, but almost twice that figure.

E. N. Terprise's was the only concern in the county big enough to supply the quantity of brick required, outside of Deadun & Company, and Deadun & Company always did have the contract and it was generally supposed that they would get it again. They made no other effort to get it than merely to put in a bid. Even E. N. Terprise had considerately kept his hands off this prize up to that time. Before the bids had been opened there was no intimation that an "Outsider" would enter the lists.

But the "Outsider" was the man whose whole business had been built up in a remarkably short time through efficiency methods. No chance was permitted to slip by. When a "Third Party" campaigner came to the city to speak, E. N. Terprise went to hear him and if possible to learn. Charlie Deadun was there too. But he was there to scoff and to help pack a political meeting to the exclusion of the earnest taxpayer.

Sells Brick on "Progressive" Basis.

E. N. got an inspiration that night. He figured that the papers would report that meeting differently. One was a machine paper and the other was a progressive publication. E. N. Terprise took counsel with himself and concluded that that was the time to get into the wool of the "House of the Sinecure." Then and there he decided to sell his brick to the county on a progressive basis. He was certain of two things that night on the way home First, that the progressive paper would be half full of the story of the meeting that night and second, that the machine paper would practically ignore it.

So he called up the machine paper the next day and said he wanted to reach every newspaper reader in the city with his advertisement. He said he knew the demand for papers would be heavy and that he wanted to put his advertisement, covering three-quarters of the page, high and all but one column, that to contain the report of the mass meeting only, into that night's issue.

The advertising manager, seeing visions of real money, for E. N. Terprise always discounted his bills, even advertising accounts, called upon the editor for information as to how much space would be devoted to the mass meeting. When told that only about half a column would be used, the advertising manager went into a perfectly proper fit of surprise and mortification to think that an editor had no better judgment of the value of news than that, and immediately gave notice that a half a column on the front page might do, but that it must run into a certain back page to entirely surround on two sides a big paid advertisement on building materials.

The progressive paper also got the advertisement right in the center of the full page account of the meeting.

That ad attracted as much attention as the report of the mass meeting. It told what the brick for the courthouse should cost, what good brick was, why E. N. Terprise had good brick, that it was reckless extravagance to pay more for brick for the courthouse that already was a burden to the taxpayers and that the Hon. John T. Umpty-Umph last night said this about "special privilege," and proceeded to quote that part of the said Umpty-Umph's speech which E. N. Terprise's stenographer had taken down for him, for quoting purposes.

Citizens Ultra-conservative.

The people of Deadun's city were very much like Deadun himself, ultra-conservative. Neighboring towns all had automobile fire-fighting apparatuses and such things but none had been provided for the old town along the river.

When E. N. Terprise's motor trucks first appeared on the streets the loyal citizens of the place began to say in a spirit of awakening progressiveness, "we do not see fire engines every day, but it shows more progressiveness in a city to have its brick, lumber and other useful commodities delivered by motor trucks than to see a painted and polished auto fire engine standing in front of a building." So E. N. Terprise came to be looked upon as a "live wire" and the people admired him. They began to buy their household supply of coal from him, because it looked nifty to have a real live automobile coal truck dump coal at the door.

Such was the backing the younger brick company got from the populace in the town in which it did business. The people figured out that E. N. Terprise had no political ax to grind. His name did not even appear on the contributing lists to political campaigns at least, although it always was among the first and with the largest amounts on lists for the campaigns to improve the city, to make it more up-to-date and to help those who needed charity.

The political machine that night at Deaduns' wanted to know if he intended to fight the award.

"Yes," said the Senior Deadun, "we're going to fight that award, but not the way you mean. You men know that I've always been a good loser. I'm going to be a good loser now, but it will be the last time I will lose an award in this county. I think I'll stand pat, but it will be the last time," and as he spoke he pounded the center table of the room with such vehemence that the vases and knick-knacks were tumbled about.

"I'm a progressive from now on—a commercial progressive," he said with such a cynical smile his son and all the other political leaders of the county who sat before him knew he meant exactly what he said.

After his callers had gone the Senior Deadun asked Deadun, Jr. to get the Western Union on the line.

Deadun Retires to Make Way for Progress.

Charlie hesitated, a look of blank astonishment on his face.

"Dad—"

He stopped short. The old gentleman's hand trembled violently.

"The Western Union, I said," he commanded severely.

The young man reached to the phone, got the required number and handed the instrument to his father, now flushed and nervous:

(*Continued on page 384*)

CLEANING BRICK AND TERRA COTTA

Writer Gives Simple Plan to Remove Unsightly Deposits on Face of Modern Fire Proof Buildings in the Cities

By GEORGE E. WALSH

THE quite general substitution of brick and terra cotta for wood in building houses raises the question of the best method of keeping them clean, especially in certain parts of the country where smoke, soot and dust are freely distributed in the air. One can rejuvenate the frame building by giving it a new coat of paint every two or three years, but not so with the modern building materials. Of course, one of the advantages of brick and terra cotta over wood is that buildings constructed of them will not require painting, and hence the upkeep is less year by year.

But brick buildings may, in time, become disfigured through stain, scum, soot and dirt so that they lose much of their original beauty. The material composing the face of the buildings is not injured by this coat of dirt, and it will work no harm to let it remain, but for the sake of beauty, owners are often anxious to clean off the surface to restore the original colors of the building materials. This is particularly true of very old buildings. Some old Colonial brick houses have been cleaned and restored to almost their original appearance, the clear, beautiful colors of the brick being brought out, in striking contrast to the dull surface, that time had produced.

A good many of these old buildings are disfigured by a whitish encrustation, technically known as efflorescence or "scum." The causes of this scum are numerous, but it is said to be most commonly caused by soluble salts in the clay. These salts become dissolved when rain falls on the surface and when the water dries, the salts are brought to the surface and deposited there in the form of a whitish scum. The scum is not laid over the surface evenly, but in spots, and the effect is very unsightly. In the course of time this encrustation will disappear as all of the salts are dissolved by successive rains, but this process takes several years, and meanwhile the building presents a very unsightly appearance.

Another frequent cause of this scum is the use of faulty materials, especially of impure water in the manufacture of the brick. Occasionally it is due to careless storage of the brick where they can absorb soluble salts from their surroundings.

Removal of Efflorescence or "Scum."

But whatever the cause, the removal of the white efflorescence is difficult. If water is used for cleaning the brick, the excess of water may make matters worse by causing a much larger deposit of soluble salts on the surface. If the scum is very thick, it can sometimes be removed by scraping the brick with a hard dry brush when the surface is thoroughly dry. The use of hydrochloric acid in a very weak form frequently proves most effective. This should be applied with a brush, followed by a cloth or something that will dry the surface quickly. The chief thing is to wet the bricks as little as possible in cleaning them with the acid.

For removing layers of dirt on old brick, a solution of hydrochloric acid is the most popular method employed, but to clean the white scum from new brick, a much weaker solution should be adopted. The amount of acid and water mixture required for old brickwork varies according to the character of the dirt and its thickness, but usually one gallon of the mixture should be sufficient for each square yard of surface.

In applying the acid to brick surfaces the face of the building should first be washed off with a hose or by hand, using only clean water. This will remove a good deal of the loose dirt. Then the acid solution should be applied with a stiff, but not wire brush, rubbing hard enough to loosen all the dirt. In some spots a good deal of scraping with the brush will be needed to loosen soot, grease and dirt.

When the whole surface has been thus treated to the acid mixture, the hose should be turned on to wash off all loose pieces and the dirt that has been left in a loosened form. One may use the hose freely, for in old brick there is little or no danger of white scum forming from a thorough wetting, all the soluble salts having been removed from such brick years before. The more powerful the stream of water the better, but it must not be strong enough to loosen the mortar between the brick. One must stop short of that.

Soap and Water Frequently Used.

Soft soap is often sufficient for cleaning brick buildings where too hard a crust of dirt has not been allowed to accumulate. Soap has no injurious effect upon brick or stone surfaces, and yet it will often remove soot and grease mixed with dirt much quicker than acid. Buildings of red or buff can thus often be restored quickly to their original color by this method. Indeed, it is a question whether such brick buildings should not be treated with soap and water once every two or three years. Some owners wash their buildings every year to keep the surface from discoloration. This is particularly true in parts of the country where soft coal is freely burned.

The solution should be made of one pound of soft soap to four gallons of water, dissolved in warm water, and used while the water is still warm. This solution should be applied with a hard brush. Where the cleaning is done regularly, the soap solution has been sprayed over the building by a force pump with fair success. After washing with the soap solution, the surface should be cleaned thoroughly with pure water, either turned on by a hose or thrown on by hand. The soap must all be removed before the building is allowed to dry, or otherwise it will appear streaked and discolored.

Soot Removed by Application of Hose.

If the discoloration of the brick walls is caused by dust instead of soot and grease, it can often be removed by washing a few times a year by pure water from a hydrant, hose or force pump. A good many keep their brick buildings in fine condition by this simple process. Then there is little occasion to resort to the soap or acid solution, accompanied by hand scraping. The closer and denser the character of the bricks, the less difficulty will be experienced in keeping the surface clean. Open, porous brick absorb and retain dirt, grease and soot.

Terra cotta buildings can be cleaned in almost the same way as brick structures, but special care must be taken with terra cotta not to injure the face of the blocks or tiles. Much of the modern terra cotta is finished off with a close, dense face, but with the main part of the mass open and porous. If this dense face is destroyed, and the porous body beneath laid bare, it will be almost impossible to keep the building clean. Soot, dirt and grease will all accumulate on the surface, and the rains will not wash them off. Consequently, whether one uses acid, soap solution or simply clean water for washing the surface, the brush must not be applied so hard as to scrape off the dense surface face. Likewise the acid must be very weak. Terra cotta as a rule does not offer as much lodgement for dirt as a brick surface, and it requires less washing. The rains will often remove the discoloration. Still there are times when it will pay to wash the terra cotta to restore it to its primitive purity of color.

Acetic acid is more satisfactory in some ways than hydrochloric acid for removing dirt and stains from buildings, but it is more expensive, costing about two to three times as much. It is equally effective in loosening and removing dirt and grease, but it has no corrosive effect upon the brick or terra cotta. On account of its non-corrosive quality, buildings that have been treated with it remain clean longer than when the stronger hydrochloric acid is used.

* * *

UNCOVER LARGE SHALE DEPOSIT NEAR OHIO CITY

THE existence of a large deposit of shale of superior quality lying along the Erie tracks a few miles east of the city of Mansfield, Ohio, has been known for a long time, but no one attempted to develop it until it was brought to the notice of the Wehinger Bros., who operated a clay plant at Gutman, Ohio, and two clay plants at Ottawa, Ohio.

The Wehinger Bros. after securing an option on about 30 acres of this shale land lying immediately along the side of the Erie tracks began to test the shale and found it to be of a quality suited to the manufacture of almost any clay product and especially brick, hollow blocks and drain tile.

This shale molds well, dries nicely and burns to a beautiful red, and under the proper degree of heat will vitrify and make an excellent paving brick. It is not the intention of the Wehinger Bros. to develop the paving brick industry immediately as the demand for building brick, block and vitrified drain tile is all and more than their plant can at present produce.

The power plant consists of a Houston, Stanwood & Gamble boiler and engine of sufficient size to admit of the installation of a second unit of machinery. The machine room is equipped with winding drum, cable and cars for bringing in the raw material from the pit, an improved Fate 9-ft. dry pan with elevator and screen, a Fate imperial brick and tile machine, Bensing automatic side cut brick cutter, end-cut brick dies, both solid and hollow, and a Bensing automatic end cut brick cutter. There are also tile dies, from 4 to 12 inches, and block dies with two Bensing automatic tile cutters. The drying is accomplished in an 8-tunnel Justice radiated heat drier. The present kiln battery consists of four 32-foot down draft kilns. Ample provision has been made for increased dryer and kiln equipment.

The Wehinger Bros. are to be congratulated on securing a portion of the Mansfield shale bed and on the thoroughly built and equipped plant which they have just erected. They are four "hustlers" and have made a success of their clay plants and we predict even greater success in the shale plant at Mansfield.

Mansfield, Ohio, is a city of 25,000 population and is a most excellent shipping point, it having the distinction of being the only city between New York and Chicago having three through direct trunk lines, the Pennsylvania, the Erie and B. & O., and besides these, it has the Walhounding Valley, which gives it a northern outlet.

The shale beds of Mansfield lie directly along the line of the Erie Railroad and are of considerable extent. The depth of the bed is from 20 to 70 feet and the overburden of soft clay is limited in depth, the shale cropping out in places. The top clay is of a good quality and mixes with the shale to good advantage.

Plant of the Wehinger Bros. at Mansfield, O.

WORLD'S PERFECT HOTEL MADE OF BRICK

Clay Products Figure Prominently in Cleveland Structure Pronounced the Last Word in Buildings of This Class

IN planning the Hotel Statler of Cleveland, Ohio, it was determined to make it the latest thing in hostelries, and surpassed by no other similar building in the United States or Europe in point of construction, equipment and service. In choosing the building material for the "World's Most Complete Hotel," it was consistent that clay products should enter largely into its construction, and they have.

The Hotel Statler was opened to the public Saturday, Oct. 19, and the event was made a gala one in Cleveland, the people in that city looking upon it as one of great public interest.

One of the distinctive features about The Statler is that it is the product almost entirely of Cleveland architects, contractors and manufacturers. The Cleveland Builders' Supply Co., which furnished the larger share of the raw materials, contracted among other things, to deliver 800,000 Bokhara face brick from the yards of the Hydraulic Press Brick Co., another Cleveland concern. These bricks were put on the job at the rate of 40,000 a day, while the brickwork was being done.

Probably no feature of the handsome new structure was so carefully considered by the architect and builders as the selection and use of the picturesque rough face brick of which the major portion of the exterior is composed. There was considerable discussion as to what color brick should be used and this point was left to a Cleveland artist, an expert in color effects, who made a careful investigation as to the blending of color effects in brick, and finally decided on the use of Bokhara face brick. The beauty of the exterior of the Statler is attributed to the use of this particular brick, very largely because of the exquisite coloring and the soft warm texture effect which was attained through its use.

Tile also was used in each of the 700 or more bathrooms, these being finished with herringbone white, nonporous tiles, of which almost 200,000 square feet were required.

The tiles used for the walls in the bath rooms, the kitchens and servants' quarters and in the elaborately finished barber shop beneath the main office and lobby, were non-crazing white glazed material of the very best grade, with specially rounded corners. The trim for doors and windows was specially designed with a view to making the most attractive, most effective, yet at the same time the simplest possible treatment for a sanitary finish. Throughout it is one of the best executed pieces of tile work ever handled in Cleveland. Especially attractive is the barber shop, where the plain glazed walls with special mouldings contrast daintily with a floor of colored ceramic mosaic work.

In the china used in the various dining rooms a service of genuine Syracuse china, especially designed to harmonize with the dining room decorations, was chosen. This design, in subdued gold, is an Adam creation in replica of the general decorative plan. Most of the pieces carry also the Statler monogram.

Syracuse china for years has been recognized as an article of peculiar excellence. Not only does this apply to quality, but as well to the daintiness of decoration and the delicacy of modeling. It is the product of the Onondaga Pottery Co., of Syracuse, N. Y., one of the most modern potteries in the country.

In choosing Bokhara brick the fact that Cleveland buildings are subjected to severe atmospheric conditions and the presence of much factory smoke, was carefully considered. It was the opinion of experts who made the selection that dark brick, even after being in use for some years, would show less wear and defacement than would light colored brick. The constant action of the weather on the odd colorings of the Bokhara brick adds to their beauty instead of detracting from it.

Nearly 800,000 bricks were used in the outside construction of the twelve-story walls. They are skillfully blended with terra cotta and stone, and produce a most unusually pleasing effect. A unique feature is introduced by the framing of panels of rough brick work in the midst of terra cotta just above the first story. The delicate colors of the brick are thereby strengthened and the picture made is an almost perfect one.

Over 800,000 face brick were used on the exterior walls; the brickwork being backed up by approximately 225,000 sq. ft. of backing-up tile. There were, in various parts of the building, over 650,000 common brick used, and fifty-three car loads of the celebrated Denison interlocking tile.

Clay Products Used for Interior Decoration.

Clay products also entered largely into the interior finishing of the Statler. Much of the unusually beautiful decorative effects, obtained in the formal dining room and grill room, was obtained by the use of tile. Tiles were made especially for this work by the Mueller Mosaic Co. of Trenton, N. J., one of the best known firms in the country. The formal dining room is laid in a minute checker board pattern in two harmonizing greens in half-inch square faience Roman mosaic, and the application of this peculiar pattern has perhaps never before been adopted in so large a space.

A handsome dark green faience tile, laid with intersecting four-inch black decorative tile, was used in the grill room, making a striking yet harmonious floor. The columns of the main dining room are treated to the height of an ordinary wainscot with a fish scale pattern of faience tile in a color that is often attempted but seldom achieved, known as the "rouge flambe," which is a specialty of the manufacturers of this tile.

Living Up to a Good Name.

It's easier to live up to the reputation of producing a first class A-1 brick than it is to live down the reputation of making a poor one. It's easier for a successful brick manufacturer to keep on making good brick than it is for an unsuccessful maker to right-about-face and bring out a first class article after making a poor one. He not only has to change his method of manufacture, but he must exert a herculean effort to persuade his customers that he is able to furnish them with a superior article. MORAL—Make nothing but the best brick—establish a good name, then live up to it—make it a rule to send out nothing but the best goods.

SAN FRANCISCO STARTS LOCAL PUBLICITY WORK

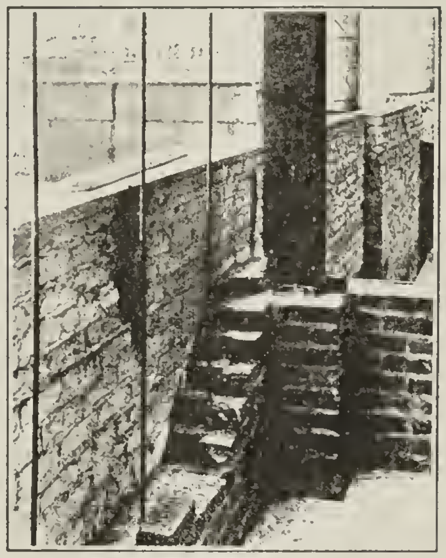
San Francisco clay men have gone into organization and publicity work with considerable energy for the purpose of creating a local demand for clay products in building and construction work. The Brick Builders' Bureau, of which Nathaniel Ellery is the secretary and manager, and the active head, has stirred up a greater interest in brick during the past few months than ever has been known before in the history of the clay product industry in that city.

In addition to presenting a united front and pushing a general campaign with a concerted effort through the usual channels, the Bureau has inaugurated a very extensive advertising campaign in the local papers and trade magazines.

Recently, the "Architect and Engineer," a most excellent publication, printed in the interests of construction work in general, issued a very elaborate number devoted to clay products as a building material. The subjects treated covered the entire building field and undoubtedly did much to promote the interests of brick and hollow tile in San Francisco. Mr. Ellery had a very interesting article of nearly five thousand words on the subject of "The Use of Materials in Construction," and in addition to this article there was another one on terra cotta by W. E. Dennison, president of the Steiger Terra Cotta & Pottery Works, and a number of special articles on the development of the clay product industry, as a whole, along the coast.

One thing that stood out, however, as very conspicuous, was the lack of patronage given the publication by the brick and clay product manufacturers in San Francisco. With the exception of a few concerns that might almost be counted on the fingers of one hand, the clay product number had little or no advertising of clay products.

The Brick Builders' Bureau is doing a great work in San Francisco, and it would be well for manufacturers in other cities to follow its example very closely. With this association, the ones in Chicago, Cleveland, O., and Dallas, Texas, and others located in different cities in the country, the publicity movement for clay products is receiving an impetus that cannot help but redound to the benefit of the entire industry.



REINFORCED BRICK CURTAIN WALL

Accompanying view shows 8-inch Reinforced Brick Curtain Wall. Can be erected quicker than concrete wall. With good mortar has equal rigidity and is more fireproof. *Costs less than concrete.*

Highest Type of Construction today

Steel Frame and Curtain Wall of Reinforced Brick

Fireproof your building with burned clay products. They do not chemically disintegrate under fire.

Specifications furnished upon application by

The Brick Builders' Bureau

1034 Merchants Exchange Building

Telephone Sutter 1475 *San Francisco*

PUTTING EFFICIENCY INTO THE SELLING END OF THE BRICKYARD

(*Continued from Page 380*)

"Take this message," he began: "To William E. Deadun,
"The Excavating Company,
"Philadelphia, Pa.
"Have retired today. Want you in the business. Answer when you'll come. Ezra Deadun.

"That's all."

Then he hung up the receiver.

"Charlie," he said as he turned toward Deadun, Jr., who was knocking the ashes of his cigarette into the grate fire. "We've reached the age of competition of a new kind. Under the old methods of doing business I succeeded fairly well in building up a good business and laying aside a little which I now intend to enjoy. New methods of doing business are in vogue which my old-time methods do not jibe with. My policies are not the policies which win success today. Billie has been trained in these new business methods. He knows them thoroughly and he is the only one who can apply them here, and the sooner they are applied the better."

"But what will you do? Discharge all the old, faithful employes who have been with you so long and root out all the traditions of your house?" exclaimed Charlie.

"Whatever Billie says."

And Ezra Deadun went into the sitting room to talk over with his wife certain plans for a year's sojourn abroad.

NATION TO FIGHT ENORMOUS FIRE WASTE

Thousands of Valuable Buildings Destroyed Annually by Fire—Government Studying Matter—Recommends Use of Clay Products

IT is encouraging to note that the Government is preparing to take vigorous measures to stop the terrible loss which the nation sustains annually, by reason of the flimsy types of construction which have been permitted to flourish in this country. The following, which appeared in a recent issue of the "Ridgeway, (Pa.) Daily Record" sets forth the nation-wide fight which is being planned to wipe

"The value of the buildings, destroyed by fire in the United States every year, is almost equal to the value of the new buildings erected.

"In that simple fact lies the foundation of a nation-wide fight that has been undertaken against the 'fire fiend.' Perhaps you have not heard much about it yet. Perhaps your neighbor hasn't. But, before long, you will, for the most powerful forces in the country—the United States Government, state and city governments, citizens' associations, leading architects and builders, and fire-fighting experts—are lined up for the fray.

"'Some day—we don't know how far off it is—but some day,' said one of the leaders of the movement recently, 'it's going to be a disgrace for a man to build an inflammable house. He'll be classed as an "undesirable citizen" just as if he made a pastime of hurling bombs.'

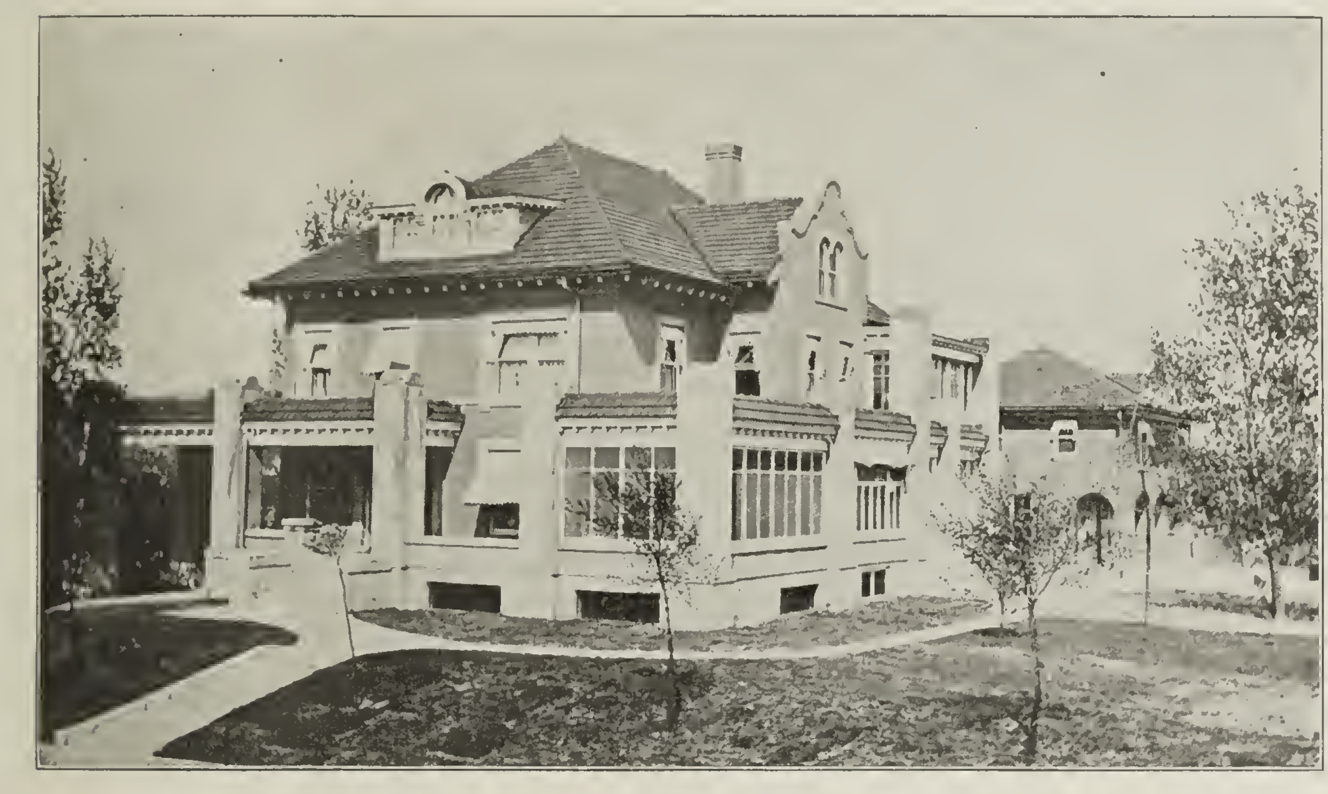
"To most men, nowadays, 'fire fighting' is a word that brings to mind clanging bells, glistening oilskin coats in rapid motion, puffing engines, and heroic firemen snatching women from the jaws of death. But the new fire fighters go at the job in a different way. Their plan of campaign is based upon a condition emphasized by the following sentence from a newspaper account of the fire in Columbus, Georgia, this spring.

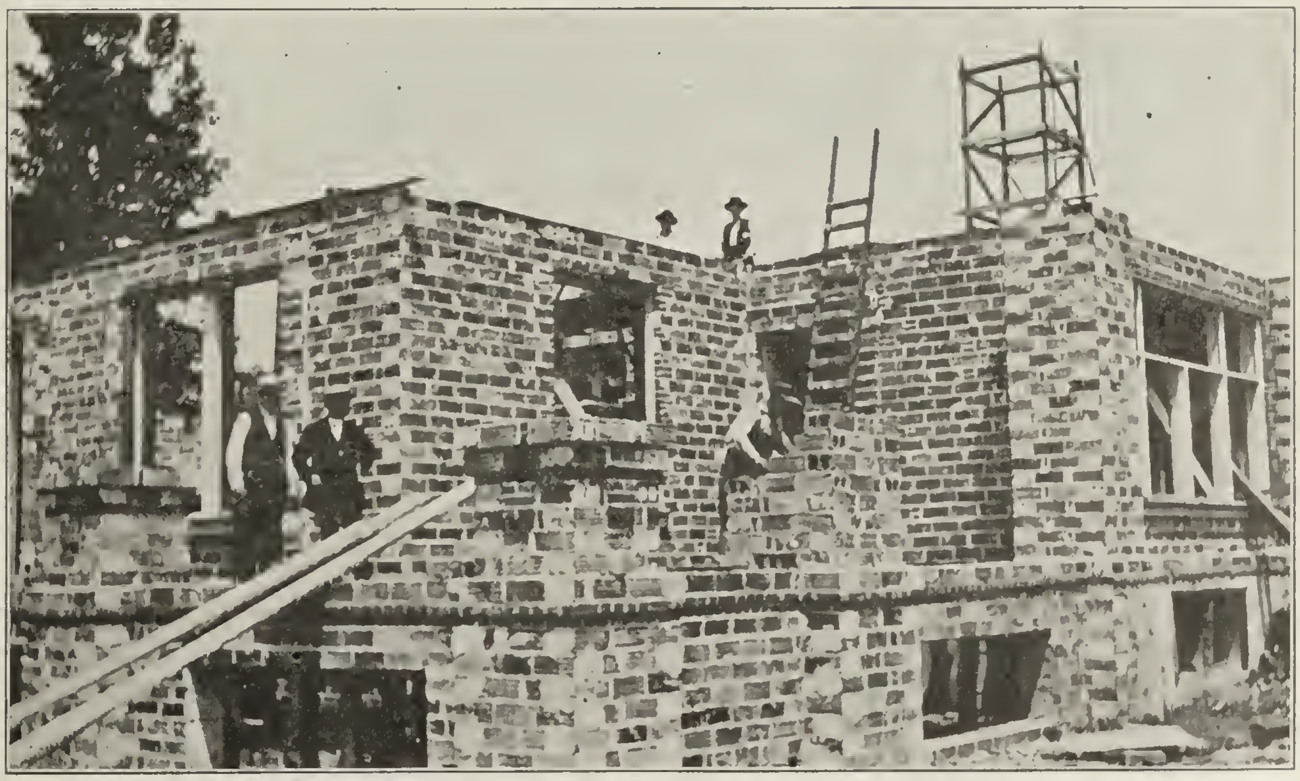
"'Many of the prettiest home in Columbus went up in smoke and flames, and now all that is left to show where they once stood are the many blackened chimneys and one lone brick building that was in the path of fire.'

"'One lone brick building'—that phrase points the lesson. It is just another version of that old proverb, 'an ounce of prevention is worth a pound of cure.'

"The United States Government, through the Geological Survey, is furnishing an example by making its own structures—its post offices and court houses—fireproof not only in name but in fact.

USE OF HOLLOW TILE IN RESIDENCES





Above are illustrations of the residence of L. P. Best, Seventh and Ripley Sts., Davenport, Ia., which was built from top to bottom of hollow clay blocks, manufactured by the Davenport Brick & Tile Co. The lower illustration shows the walls in the rough and the other the residence as finished. The plaster was placed directly on the blocks, which, being hollow, protect the plaster from frost and moisture. These illustrations demonstrate what fine buildings can be erected with hollow clay blocks.

MAKERS OF CLAY LITERATURE.

Transactions of American Ceramic Society, Volume 14, a Valuable Addition to the Clayworker's Library.

To that noble body of technical men, the members of the American Ceramic Society, who have for many years devoted their time, energy and money to experimental work, in the interests of the clay industry, we are indebted for most of the valuable clay literature which we have today.

This society may well view with pride its achievements when it recalls its humble beginning in 1898, when three gentlemen in Pittsburg, while exchanging their various experiences in ceramic work, conceived the idea of an organization for the purpose of gathering together the existing knowledge of the industry and establishing a foundation for further research and enlightenment. Science, as applied to practice in ceramics, was at that time practically unknown and it was a question whether those interested commercially in ceramics, who had little faith in scientific measures and less desire to adopt them, could be sufficiently interested to effect an organization.

The proposition, however, was well received and the following year (1899), at Columbus, O., the birth of the American Ceramic Society was announced.

The undertaking, like all such innovations, met with many difficulties but the earnest purpose, zeal, ability and determination of the organizers carried the society safely through its early trials and today, its standing throughout the entire world is one of unquestioned authority in all ceramic matters.

Its publications have grown far beyond the hopes of its founders and from the first volume of 110 pages, consisting af eight papers and five discussions, the printed "Transactions" have grown marvelously, the published work exceeding in extent and variety the sum total of all other publications on the subject of ceramics in the English language.

We have, at hand, the recently published volume fourteen of the "Transactions," containing 871 pages.

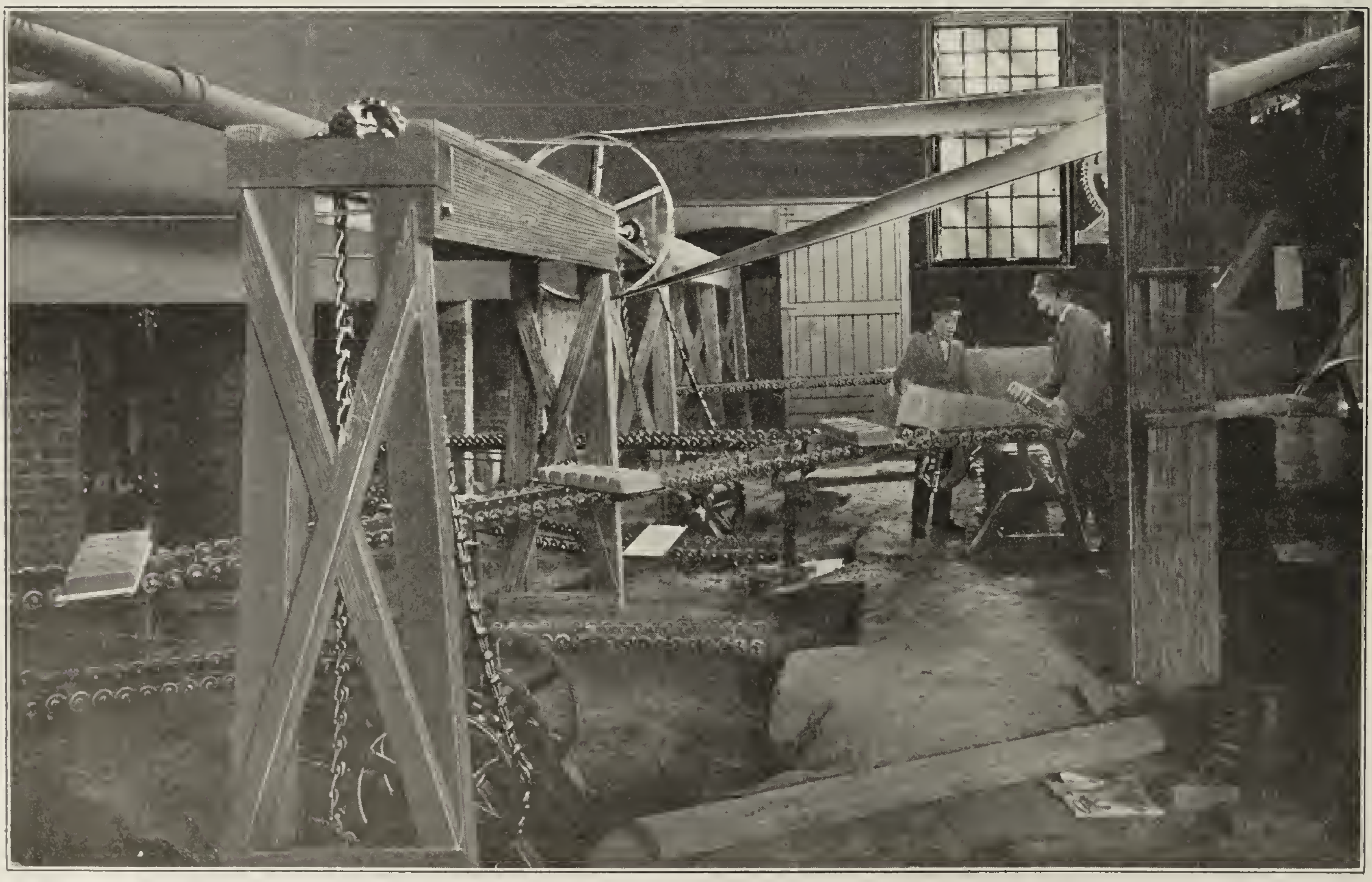
Every clayworker should have a copy of these "Transactions" in his library and the price, $5.50 for paper and $6.25 for cloth binding, is remarkably low considering the vast amount of work necessary in preparing and publishing a book of this character. Copies may be procured from Secretary Edward Orton, Jr., Columbus, O.

ECONOMICAL HANDLING OF BRICK.

Canadian Company Installs Gravity Carrier to Convey Brick from Press to Drier.

The Standard Brick Co., Toronto, Canada, recently installed a modern device for conveying green brick upon pallets from the press to the dryer. This arrangement effects a great saving in room, doing away with trucks and lessening the labor considerably. This gravity carrier is similar to those used in canning factories, breweries, etc., for handling boxes, and consists of steel ball bearing wheels upon parallel bars set at a grade of three per cent (3 ft. fall in 100). Any smooth article placed thereon will travel of its own weight any desired distance, either in a straight line or around curves. In the manufacture of brick especially such carriers are found to be very economical. In this instance the pallets with the brick are sent from the press to the dry kiln and the empty pallets are then returned to the press. These carriers were manufactured and installed by the Canadian Mathews Gravity Carrier Co., Toronto, Canada.

GRAVITY CARRIER USED IN CONVEYING GREEN BRICK



The Mathews Steel Ball Bearing Wheel Carriers in Use Conveying Green Brick from press to dryer at plant of the Standard Brick Co., Toronto—Carriers manufactured and installed by the Canadian Mathews Gravity Carrier Co., Toronto.

TEXAS CONCERN FINDS PUBLICITY PAYS

Derives Good Results From Exhibit at "Made-In-Houston" Show Held Recently in Metropolis of the "Lone Star" State

SOUTHERN clay product manufacturers are just as much interested in the boosting of burned clay building materials, as their Northern brothers, and with this end in view, the Vandaveer-Stoy Co., manufacturers of brick, took advantage of the recent "Made in Houston" (Texas) Exposition, and erected a clever exhibit of their products.

In a talk with a representative of "Brick and Clay Record," General Manager H. C. Vandaveer declared that he was convinced that displays shown at expositions and country and state fairs was an excellent method of getting the public interested in clay products, and that his company had found the "Made in Houston" display an excellent proposition from a business point of view.

This company is operating two plants—The Brazos Brick & Drain Tile Works at Rosenberg, Texas, and the Prewitt Brick Manufacturing Co., with plant located at Elgin, Texas. It is the intent of this company, at an early date to operate these two properties, under the firm name of the Southern Clay Products Co.

The head offices of the Vandaveer-Stoy Co., are located in Houston, Texas, with sample rooms in suite 330 Chronicle Building.

The Rosenberg plant of this corporation is located on the main line of the Southern Pacific and Santa Fe roads, while the Elgin plant is situated on the Austin branch of the Houston road.

At the Rosenberg plant, plastic red burning clay is used, while at the Elgin works fire clay only is used. The clay is obtained with plows and scrapers and is loaded into cars of 2-yard capacity, and hauled to the plants by a gasoline motor car. The clay requires no weathering and at the Rosenberg plant it is dumped directly into large hopper bins, but at the Elgin plant, the clay is stored for a brief period in a shed.

A Freese machine is used exclusively at the Rosenberg plant, but at the Elgin works, a Boyd press has been installed. At this same works, American dry pans, having a capacity of 90-tons per diem, are in service. At the Rosenberg plant a Williams' pulverizer is used in preparing the material.

Four additional 30-foot down draft kilns are being built at the Rosenberg plant, which will make six kilns in all.

There are four scove kilns at the Elgin plant. These 300,000 capacity kilns have open flues, about 100 tons of coal being required for burning a kiln of brick.

Within the next six months this company will spend upwards of $125,000 in improvements at these two properties, and it is planned to make them the most modern of their kind in the South. "We anticipate big business, and of course we have to prepare in advance," declared Mr. Vandaveer.

Clay is tempered at the Rosenberg plant by a pug mill, but at the Elgin works the dry pan is used. The pug mill is of the E. M. Freese pattern. At the Rosenberg works the stiff mud process is in use, the clay being tempered in a Freese pug mill, a Freese tile machine also being used.

Both of these plants are worked twelve months in the year, and there is no cessation of work except to make needed repairs.

An illustration of the exhibit which this company had at the "Made in Houston" Show is herewith shown. The display was one of the most admired in the large building, and as a direct result of the showing, a number of good orders were booked, for the various products shown, besides numerous inquiries received, which are now being followed up and are resulting in some new business.

Exhibit of the Vandaveer-Stoy Co., at the "Made in Houston" Exposition.

The Vandaveer-Story Company furnished all the hollow tile used in the construction of the Rice Hotel and also has a contract to furnish similar tile for the $350,000 residence that is being built by H. M. King on the King ranch. Sewer pipe, fire brick, fire clay, culvert pipe, roof tile and conduit pipe are some of the many products of this Houston industry.

ORDERS AD DISCONTINUED.

Just recently we received a letter from a company which had been running a small ad with us, which read as follows: "Please discontinue our ad, as we have disposed of the property. We are very well satisfied with our advertising in your paper." Another company wrote: "Please suspend our ad until further notice, as we have disposed of part of the machinery, and have a good prospect for the remainder." We get many similar letters from satisfied users of "Brick and Clay Record" classified ads. These little ads bring results.

Our paper is published the 1st and 15th of each month, and we are therefore able to get quick returns from advertising in our columns. We have a distribution of about 7,000 copies per issue—thus allowing you to reach practically the entire industry at one time.

The clay manufacturing world is awakening to the possibilities of modern sales methods—of advertising, of efficiency on the distributing end of the business as well as the manufacturing.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. NOVEMBER 15, 1912 No. 10

THE LAW OF TRADE

The most unyielding law of trade is that **DEMAND REGULATES PRICE.**

Coal is discovered in a community. It is found in quantities so great that there need be no fear for years to come that **SUFFICIENT** fuel cannot be had to **SUPPLY ALL THE NEEDS** of that community.

For a time—perhaps for years, the local factory and the little home-owner are enabled to secure fuel at a most **REASONABLE** price.

However, there comes a time when conditions in nearby communities force the fuel users to import coal. A dealer writes to your coal operator and buys a few car loads to relieve the extra demand he is unable to supply from his own coal miner.

For a time this has no **APPRECIABLE** effect on your community. But there comes a time when the dealers in other cities, discovering the inexhaustable supply of fuel in your market, begin to order shipments.

What happens? Your miners, finding that you are reaping a harvest demand **INCREASED** wages. Your mine operator, realizing that he is in a position to force a greater price because of the extra demand for his coal, yields to this cry for more wages rather than face a threatened strike and an interruption in his sales, and **THE PRICE GOES UP.**

This same rule applies to **ALL** trade marts.

And in no **ONE** industry is this more noticeable than in the print paper market.

A few years ago, with the discovery of new methods in the manufacture of news print paper, newspapers and magazines sprung up all over the United States.

The demand for blank paper grew with leaps and bounds. Further improvements in machinery and methods **KEPT THE PRICE DOWN** but still new publications sprung up in every state in the union.

The people, hungry for information and demanding enlightenment on matters of public interest, caused daily papers to be established where weekly papers heretofore supplied the requirements of the community.

What was the result? The paper mills, unable to fill their orders, worked night and day. **LABOR,** seizing the opportunity to get more for its services, **DEMANDED GREATER WAGES.** Prices were **ADVANCED** to meet this new condition.

Then came **ANOTHER** problem. The great forests from which the pulp to make the paper was drawn, **BEGAN TO SUFFER.** Scarcity of raw material **FORCED ANOTHER ADVANCE.**

The situation today is so serious the price of print paper has made the publication of papers and magazines of large circulation almost prohibitive at the old rates of subscription.

"Brick and Clay Record" is no exception. Two years ago, when this publication was changed from a **MONTHLY** journal to a **SEMI-MONTHLY** it was believed that the same old price of $1 a year could be maintained.

But price of print paper has increased from time to time. In addition to this condition the greatly improved magazine, its enlarged form and the increased cost of its production in other departments made it practically impossible to continue what then was considered an experiment.

The increased cost of labor alone is a big item. Take the printer, for instance. Where he received $18 per week for his services, **TODAY** this journal must pay him $28, an increase of **MORE THAN 50 PER CENT.**

"Brick and Clay Record," has been growing each year. New departments have been added. Contributors and writers of repute have been added to the regular editorial staff and the journal has **OUTGROWN THE $1 CLASS.**

Beginning with the new year of 1913 our plans contemplate even greater improvements in the journal. We not only expect to make it larger but better.

THE SAME OL' FIGHT AND THE USUAL OUTCOME

And with this improvement will come the **NECESSITY** of advancing the subscription price.

The only competitor of "Brick and Clay Record" is a **MONTHLY** publication. No **ONE** issue is as large as **ANY** one issue of this publication nor is it one-half so good.

Yet this competitor, with **HALF** the numbers we print in a year—twelve as against twenty-four, charges $2 for a year's subscription.

This price of $2, while it may be too much for a **MONTHLY** publication, is **NOT** too much for one that is published **TWICE** a month and beginning with January 1, a year's subscription to "Brick and Clay Record" will be advanced to that figure.

Subscribers to this journal will continue to get the greatest value in a clay journal for their investment as in the past and the new price will enable us to still further improve the magazine.

ONE SINGLE SERIES of articles alone which has been planned for our readers **WILL COST THIS PUBLICATION** $4,000.

This series will be on "Salesmanship in the Clay Product Plant," and the most competent sales experts in the country have been employed to plan it.

So thorough will be the work of these experts that writers will visit clay plants in various sections of the country before the first article will be prepared, so that what they **WRITE** will be from **FIRST-HAND** sources.

And while these articles will cost **US** $4,000 to **PREPARE** they will cost you as a reader of this journal only $2, a very small proportion of the real value they will be to you.

Then there are other campaigns outlined for the coming year which will be of **ACTUAL MONEY VALUE** to every reader.

For instance, there is the fight for organization work. This movement, instituted by this journal, will mean a great increase in the clay product output during the coming year and **YOU**, as a member of this industry will receive **YOUR** share of the benefits to be gained.

In addition to the special campaign planned and the special series of articles on live topics "Brick and Clay Record" will be brimful every issue with instructive features.

Our experts will continue to solve the knotty problems that confront the clay manufacturer in the clay pit, in the mill and in the kiln.

NONE of the departments that have made this journal so popular in past years will be curtailed.

On the **OTHER** hand, these will be **IMPROVED** and **ENLARGED** and **MADE EVEN MORE VALUABLE** to our readers.

This announcement to increase the price of a year's subscription is made early to enable all regular subscribers to renew at the **OLD** rate before the **NEW** one goes into effect.

We feel this much is due you and we call your attention to the announcement of the circulation department on page 37 of this issue.

* * *

HE CATCHES THE IDEA

The cartoon in this issue is supplied by a reader who was impressed by the work this journal has been doing in the way of calling the clay manufacturers' attention to the necessity of organization.

"I was impressed with your editorial on salesmanship," writes our friend, "and have endeavored to emphasize the point with the enclosed sketch."

Our readers will agree with us that our amateur cartoonist **HAS CAUGHT THE IDEA** in a most excellent manner. The more that catch it in the same way, the better it will be for the industry.

The great trouble with the average clay product manufacturer is that he permits himself to **KEEP AN EYE ON HIS FELLOW CLAYWORKER** while he **IGNORES HIS REAL ENEMY.**

Just as the cartoon shows, the foe walks away with the prize for which we should all be fighting while we are busying ourselves with petty disputes with our brothers.

Better join hands, Mr. Clay Manufacturer, and fight the enemy with a united front. That is the **ONLY** way to win the fair Miss Business.

* * *

PROOF OF THE PUDDING

This journal has been trying to impress upon the clay product manufacturer the necessity and the value of association work.

From time to time we have cited specific instances to show how organization has benefited other industries—particularly those in direct competition with clay products.

And while we have been hammering away at you and urging you to leave **SELFISH** interests and a **PETTY, JEALOUS SPIRIT BEHIND** and to take up the broader and more profitable idea of doing **SOMETHING** to benefit the industry as a **WHOLE**, we have not lost track of the fact that already you have capable organizations ready and willing to join with you in any movement that will accomplish the end you seek to attain.

What we have aimed at is to **MOVE** you to **DO SOMETHING.**

So far you have **NEGLECTED YOUR OPPORTUNITIES.** You have been content with letting your **NEIGHBOR SHOULDER ALL THE RESPONSIBILITY.**

In our last issue we told you something about the good work the National Paving Brick Manufacturers' Association was doing. We even urged you to become a member of this organization and pointed out the value of such a membership to you.

Since that editorial appeared in print we have had a number of cases brought to our notice which emphasized the point.

One subscriber asked if we could supply him with literature or arguments for brick construction work, explaining that in his city certain capitalists were planning a large factory building and that those interested were favorable to concrete.

The writer is a manufacturer of building brick. **EVIDENTLY** he is not a member of the Building Brick Association of America or he would not have been forced to write to this publication for help.

He was advised to write to Secretary Fiske of the association who would supply him with the necessary data. He also was advised **TO LOSE NO TIME IN BECOMING A MEMBER** of the Association as his dilemma proved his need of association work.

Another subscriber, realizing he was not getting his share of business in his community and desiring to furnish more brick for the many new residences that were being erected, asked us to supply him with the necessary arguments to be used.

This correspondent likewise was urged to write to Mr. Fiske.

These cases are only two of many that come to our notice every day and emphasize the point we have been trying to impress upon you in our feeble way.

You **CANNOT** accomplish anything without teamwork. The very fact that you are **NOT** getting as much business as you think you should proves your need of the assistance of others who are doing **SOMETHING** for themselves.

The **ONLY WAY** you can **GET** this assistance is to **ASSOCIATE** with the fellow that **CAN** give you new ideas and good ideas.

* * *

The biggest and brainiest men in the world to-day are salesmen. They may call themselves brick salesmen, bankers, lawyers, engineers or ministers. As a matter of fact, they are all selling their own or someone else's services, their own or some one else's wares, and the man who is the best salesman gets the highest price.

IMPERMEABLE ROOFING TILES.

Several Suggestions for Treatment of Tiles to Secure Desired Result.

Sooner or later certain manufacturers of roofing tiles find a demand for impermeable tiles, and they usually seek to meet this demand by covering their ordinary tiles with an impervious material, says a writer in "Contract Record." He says that: "Theoretically it would appear to be better to burn the tiles until they become more vitrified, but this is practically too difficult of accomplishment in most cases, as certain roofing tiles are so thin that, with the slightest overheating, they twist and are spoiled. Hence it becomes imperative to apply some covering material which will make the tiles sufficiently impermeable without otherwise affecting them when in the kiln.

"Under these conditions two methods of working are available: the tiles may be dipped in a glaze, or they may be tarred after they come out of the kiln. Glazing enables tiles of any desired color to be produced, but with tar only black tiles can be made, and these are liable to become unsightly in use.

Method of Treatment.

"The dipped or glazed tiles are usually treated before they are placed in the kiln, as this method is so much more economical than when they have first to be fired without a glaze. A suitable slip is composed of lead oxide or galena, flint and a little clay, the proportions of each depending on the temperature at which the kiln is fired, the shrinkage of the clay, etc., and consequently are only ascertainable as the result of actual trials. It will usually be found that three times as much lead as clay, and twice as much flint as clay is a useful proportion to start with, but the clay must be varied according to the nature of the tiles. The lead compound should always be present in greater amount than the flint, or the glaze willl be too infusible. To increase fusibility a larger proportion of lead is added.

"When the glaze is to be colored, about one-twentieth of the total weight of the whole glaze is added in the form of color, the usual pigments being manganese dioxide to produce a brown, copper oxide to produce a green, and chromium oxide to produce an opaque green. The color of the burned tiles will, naturally, depend on the proportion of pigment added, and the figure given above is only approximate, as the natural color of the tile has a considerable influence on the result.

"The firing is carried on in the usual manner, the only difference made by the glaze being that the setters must take care that the glazed surfaces of the tiles do not come in contact with each other.

Application of Tar.

"When tiles are to be made impervious by tar, it is necessary that they should be fairly porous, or the operation will not be successful. It is also important that both tiles and tar should be hot, so that the most convenient time for tarring is when the tiles are being drawn out of the kiln. They must not be too hot, or the tar will not be absorbed properly. Benfey has stated that the tar should be at a temperature of 100 C. and the tiles at 50 C., but this appears to be rather low for the tar.

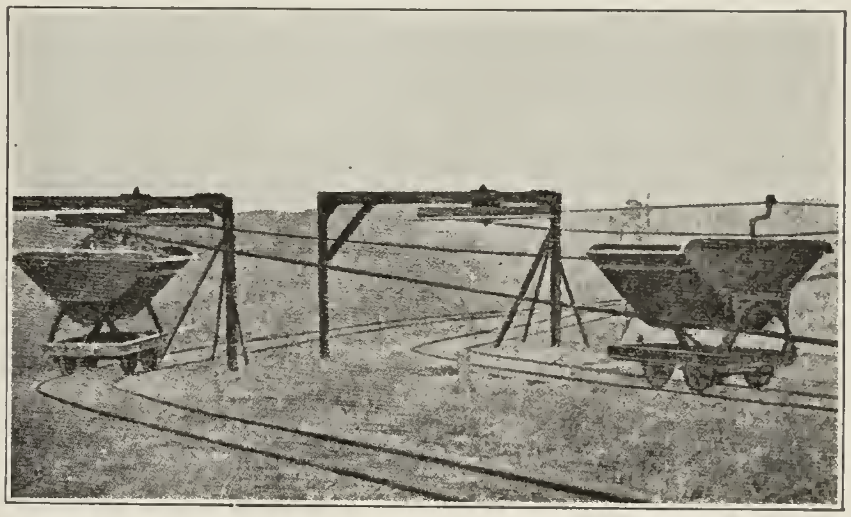
"It is a common fallacy to suppose that tiles are made permanently impermeable by tar, whereas in reality the tar is only a temporary protection, and when part of it has been removed by the action of the weather the tile will soon become unsatisfactory. Again, the softest and least durable tiles are the ones which absorb the tar the best, yet they are the most unsatisfactory in actual use.

"A method of firing which will produce impermeable tiles without the risk of twisting them is much to be desired, but is practically unknown. All that can be done, therefore, is to choose a clay with sufficient non-plastic material in it to keep it from twisting, and sufficient fluxes to yield a reasonably impermeable tile, or to dip the whole tile in a suitable glaze."

ROPE HAULAGE FOR CLAY PLANTS.

Novel Arrangement Which the Ingenious Clay Man Might Adapt for His Requirements.

A rope haulage arrangement, which has proven quite efficient, is in use at the Tenggrenstorp brickworks in Sweden. This system, which was described in a recent issue of the "British Clayworker," brings the clay a long distance from the clay pit, turns corners at right angles, hauls the wagon up a steep incline to the dumping place, without the wagon having to be disengaged from the rope. The general plan of this rope haulage arrangement is shown in the illustration, which shows the turning wheels for taking the wagons around sharp curves. For hauling over long distances, this system is said to prove much more effective and runs much more lightly and smoothly than the old style chain haulage. It is also said much less power is required for driving it. This haulage system is made by the firm of Abjorn Anderson of Svedala, Sweden, which also provides complete outfits for brickworks, including a large variety of elevators, transporters, conveyors, etc.



Courtesy British Clayworker

Novel Rope Haulage System in Use in Sweden.

American Workman Receives Highest Wage.

Wages of workmen in this country compared with the European scale, are two, three and even five times as great, while in lands where colored men do the work the difference is still greater. In Great Britain, bricklayers receive $9.12 per week, in the United States $26.77 to $31.20.

The average wage of pottery workers in England is $6.90 per week, in this country $23.38. Jiggermen are paid $8.42 in England and $25.08 here; kiln firemen, $12 and $20; men cup makers, $7.48 and $22; pressers, $5.94 and $8.59; throwers, $6.68 and $26, and so forth. In potteries, the average wage earned per hour in the United States is 24.8 cents; in England, 11; Germany, 9.1; Austria, 8.6; France, 8.25, etc.

Common laborers in Southern Europe may be procured for 30 cents a day.

LEGAL DECISIONS

Rulings Which Are of Interest and Importance to Clay Manufacturers and Shippers

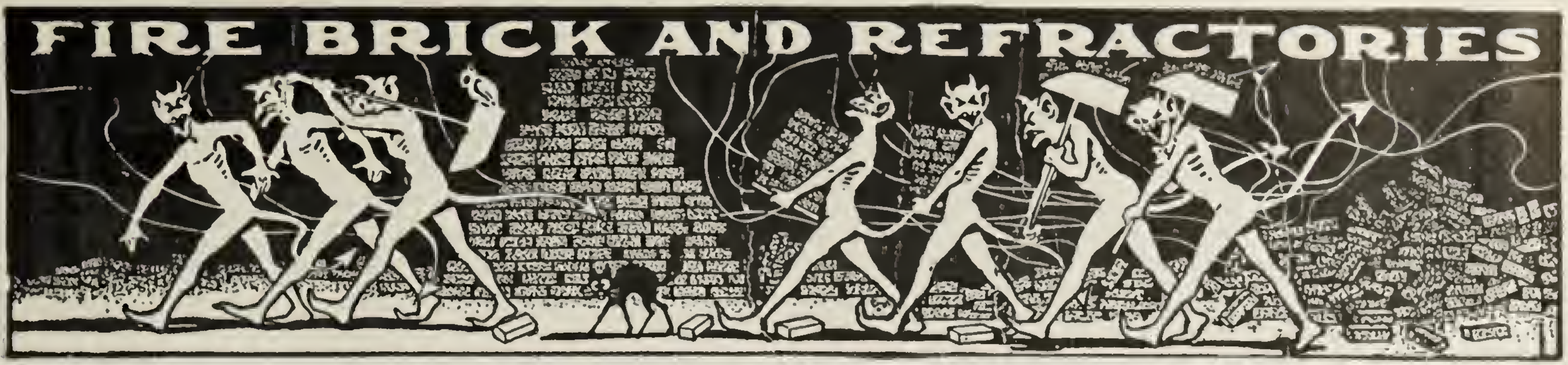
The Telephone in Business.—The telephone has been in common use for more than 30 years. The method of communication by it is universally known among business men. Practically every business house has one or more of such instruments, and uses it daily and frequently. Large establishments maintain a local system, with a special operator at their place of business, with ear to the receiver, to hear calls and answer them, or connect the local wire with the person called for, or some one authorized to act in the particular matter. The telephone companies keep a large force of operators in their central stations constantly engaged in connecting the wires of the different subscribers who wish to speak to each other. The process of making these connections is so rapid and frequent that it becomes almost mechanical. It may, therefore, be assumed that, as compared with the whole number, the number of mistakes in connections that are not immediately discovered by both parties is very small. These considerations show that the telephone and its use have become so much a part of daily life and experience that business carried on over it must be deemed subject to the operation of the disputable presumptions or inferences applicable to like affairs, such as "that private transactions have been fair and regular"; "that the ordinary course of business has been followed"; and "that things have happened according to the ordinary course of nature and the ordinary habits of life." These presumptions have been recognized by the courts and applied to the cognate operations of the telegraph and the post office. If a letter or telegram is duly addressed, prepaid, and delivered in the post office receptacle, or to the telegraph company, there is a disputable presumption of fact, arising from the almost invariable result, that it has been transmitted and delivered in regular course to the persons addressed. And the general rule, gathered from a number of decisions, the Supreme Court of California says, in Union, Etc., Co. vs. Company, 125 Pacific Reporter, 242, is that, where it is shown that the witness called up the other party at his place of business through the central station with which both were connected, and received a response in the usual course of business over the telephone, this is sufficient prima facie identification of the speaker at the other end of the line as the party called, or his authorized agent; and that, upon such proof, the ensuing conversation, if otherwise admissible in evidence, may be testified to by the witness, although the weight of such evidence depends largely upon the circumstances of each case.

Sources and Extent of Power of Agents to Bind Corporations.—Under the modern doctrine, both in England and America, it is the rule that, in the absence of special requirements in the charter or in the laws of the state, a corporation may confer authority on an agent for the performance of any act or duty, within the limit of its corporate powers, by writing or orally, just as an individual would, and, as in the case of the latter, agency may be implied from acquiescence or from ratification or recognition of the acts performed by the agent. It is the rule that when a person has held out another as his agent in a certain capacity, or has knowingly permitted him to act as his agent, or where the circumstances are such as to raise the presumption of agency, the authority of the agent to act will be presumed in so far as the rights of third persons may be concerned. But a corporation is not bound by the declarations or admissions of its individual directors, officers, or agents outside the scope of their agency or authority, nor when not made in connection with the performance of their duties. Another rule is that the authority of an agent must be traced back to some word or act of the party sought to be shown to be the principal, from whom alone authority to act can be obtained. Hence evidence of the statements or admissions of the alleged agent is not admissible to establish his authority, and such evidence can never be used against the principal until the fact of agency has been established by other evidence. But an agent may testify, the Court of Civil Appeals of Texas says, in Cannel, Etc., Co. vs. Luna, 144 Southwestern Reporter, 721, as to the extent and nature of his authority, where such authority is based on oral and not on written evidence, just as could any other witness.

Duties for the Performance of which Employers are Personally Held Liable.—For injuries sustained by employes through the negligence of what are called fellow servants employers are not, as a rule, held responsible, in the absence of a statute making them liable. But there are some duties which, without any special statute, are held personal to the employer, and which he cannot delegate so as to escape liability for the proper performance of them on the ground that the negligence in their performance causing an injury to an employe was the negligence of a fellow servant of the one injured. And it is generally held, the Supreme Court of Wyoming says, in Engen vs. Company, 121 Pacific Reporter, 867, that it is the employer's nondelegable duty: (1) To furnish his employes with reasonably safe machinery, appliances, tools, and places to work, and to keep the same in reasonably safe repair. (2) To employ competent and sufficient employes with whom to work, (3) To establish and enforce reasonable business rules.

What May Be Proved Orally in Connection with Written Contracts.—The general rule is that where a written contract is plain, unambiguous, and complete in its terms, oral evidence is not admissible to contradict or to vary or to add to any of the terms of the written contract. But the Supreme Court of Arkansas holds, in Cox vs. Smith, 138 Southwestern Reporter, 978, that oral evidence is admissible to explain some indefinite term in a written contract. Also, to add to a written contract some term or provision, where the writing, on account of fraud or mistake, does not contain all of the contract. And a separate, independent verbal agreement, relating to a matter embraced in the written contract, may be proved by oral evidence. Moreover, it is ordinarily competent to prove by oral testimony the consideration upon which a written contract is founded, and to show by such character of testimony that such consideration has not been paid as it is recited in the written instrument, or that other consideration was agreed upon; but this can be done only in cases where such oral testimony will not contradict the terms of the written instrument.

FIRE BRICK AND REFRACTORIES



PROMISING FUTURE FOR REFRACTORIES.

Great Demand for Special Shapes for Chemical and Ceramic Industries.

The industry of producing refractory materials offers an especially promising field of research. Many metallurgical furnaces have to be relined much more frequently than should be necessary, and while this relining is being done their operation must be suspended for weeks. Charles L. Farsons, in "Notes on Mineral Wastes," says: "A specific instance was recently reported in which the regular life of the furnace in an important industry was increased from six months to over two years simply by a careful study of the texture of the refractory brick used and by the developments of methods for decreasing their porosity. Great improvements have taken place in the past few years, but few careful scientific investigators have attacked the problem. Bauxite brick offer an especially promising field, if their cracking under contraction and expansion can be controlled—a result by no means improbable, for already one producer claims to have accomplished it. Furthermore, by the addition of alumina to the clay from which they are made it is quite possible that the best fire clays can be greatly improved and brick be made from them approaching in composition bauxite brick.

"There are also large quantities of highly aluminous clays in the bauxite regions of Georgia and Arkansas, which on investigation may prove to be highly valuable for refractory purposes. Some recent work by thoroughly competent experimenters indicates an awakening interest in the subject. The need for special refractories has been forced home by the much higher temperatures demanded in the chemical and ceramic industries. Indeed, the field of the electric furnace is limited chiefly by the ability of the furnace walls to resist heat.

"According to FitzGerald, brick made from special forms of silicon carbide and from electrically calcined magnesia have shown most excellent resistant properties. In this connection, there is a growing demand for zirconia, and an abundant and cheap supply of this material, or of any of the cerium group of earths, would prove highly important to electric-furnace development."

THINGS YOU SHOULD KNOW.

Useful Information Compiled by the Pyro Clay Products Co.—Keep It for Reference.

A standard 9-inch brick weighs 7 pounds.

Use clay mortar as a thin slurry, for dipping your brick, then rub into place. Don't use a trowel.

From 400 to 600 pounds of clay is enough to lay 1,000 brick.

A ton of clay will lay from 3,500 to 5,000 brick.

It is better to use clay of the same quality as your brick.

A surface foot of 9-inch wall takes thirteen 9-inch brick.

A surface foot of 4½-inch wall takes six and one-half 9-inch brick.

A cubic foot of wall takes seventeen 9-inch brick.

A cubic yard of wall takes four hundred and sixty 9-inch brick.

In estimating wedges, arches or keys, add 10 per cent. cent.

In roofs, light burnt brick are usually better than hard burnt.

Keep firebrick dry. Being porous, they absorb water. This injures them, particularly in freezing weather.

Before putting on high heat, warm new work slowly to drive off moisture.

Old work can be heated faster, unless during idleness it has become wet. In that case, heat slowly.

Cold air after high heat is hardest on firebrick work. Cool furnaces slowly.

Watch your furnace stays. Silica brick expand. Clay brick shrink.

Minimum carload of brick or clay is 50,000 pounds.

Grind up your old firebrick or cupola blocks, mix fireclay and you have the best kind of cupola daub.

A thousand firebrick, close stacked, take up about 56 cubic feet.

Temperatures.

A rough-and-ready scale for estimating the heat of iron.

	Fahrenheit Degrees.	Centigrade Degrees.
Just glowing in the dark	977	525
Dark Red.	1252	700
Cherry Red.	1666	908
Bright Cherry Red.	1832	1000
Orange.	2102	1150
White.	2372	1300
Dazzling White.	2732	1500

THE ACTION OF GRAPHITE ON FIRE CLAY.

Fire Brick Effected by Phenomenon of Formation of Free Carbon in Its Pores.

The serious action of carbon on the material of which gas-retorts are made has long been known, and only about a year ago there were published by F. Schreiber some observations on the formation of free carbon in brick used for coke ovens. In one brick examined there was a black symmetrical layer nearly an inch thick. The brick was carefully cut, and the three layers into which it was divided were analyzed, with the following results:

		SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	K_2O	C
Upper layer (clay)	1¾in.	83,77	12,69	1,16	0,24	0,42	1,56	0,26
Black middle layer	⅞in.	80,00	11,08	0,67	0,23	0,29	1,58	6,15
Lower layer (scarcely attacked)	½in.	83,35	12,73	1,15	0,23	0,32	2,01	0,21

The brick was spoiled and weakened by this formation of free carbon in its pores. Schreiber suggested that this phenomenon is characteristic of acid bricks, in which the expansion of the quartz makes the mass porous and permits the carbon to enter in the form of hydrocarbon gases, which are afterwards decomposed.

It is very desirable that further investigations should be made on this matter, for several interesting facts are observable in the figures just given.

SEWER PIPE NEWS

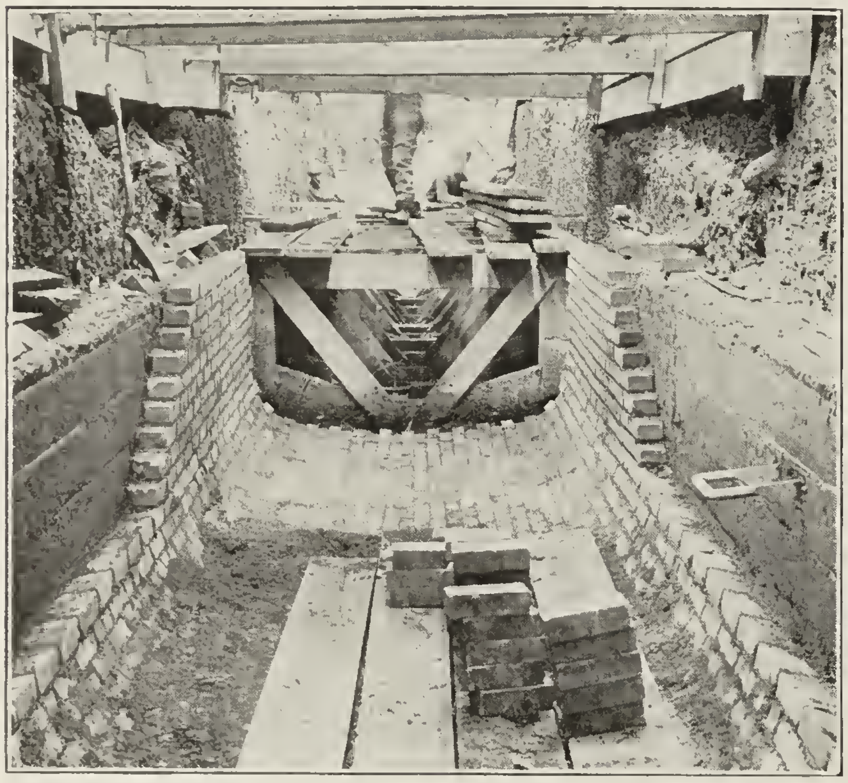
PITTSBURGH FAVORS BRICK FOR SEWERS.

Sewer Built Eighty Years Ago Proves Durability of Brick for this Work.

Brick is being used to the exclusion of all other material in the construction of the new sewers in the Greater Pittsburgh district, more particularly where the Pittsburgh Bureau of Construction has "its say."

More than eighty years ago a brick sewer was built in Wood street, and from time to time it has had to be tapped after large sky scrapers were erected. This gave the municipal engineers enough proof that brick was just the material that should be used in the construction of the new sewer systems, and plans were worked out accordingly.

The photograph, which was taken under ground, shows the method followed in the building of the Try Street sewer. Concrete sidings were first built, and then these were lined on the inside with large brick, of a vitreous character, but of a special size. Engineers maintain that this form of sewer construction with brick will outlast concrete sewers and even large wrought iron sewer pipe.

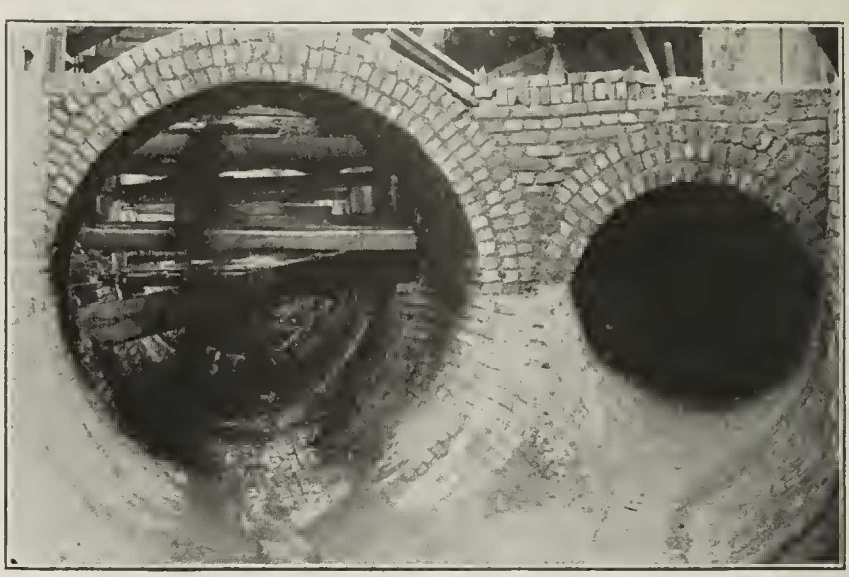


Showing Method of Constructing Interior Chamber of Brick Sewer at Pittsburg, Pa.

The illustrations show a sewer that is being built almost in the heart of the "Hump cutting district." This is among the largest that has been built in the downtown section. It measures five feet eight inches by five feet eleven inches, thus giving it an immense capacity. The sewer when completed will open into the Monongahela River near the Pan Handle railroad bridge.

Results Obtained.

Study of the results obtained shows that the test in which the temperature is 1,350 degrees C and the load 50 lb. per sq. in. is to be preferred. The main purpose of the work is to suggest a test for high-grade refractories which will certainly reject any lower grade material. It is successful in doing this, but whether it is too severe remains to be seen. In no case should a refractory be condemned solely on the basis of this test, Prof. Bleininger says, unless it has been established that the material is to be used under load conditions. At any rate the softening temperature should be determined and a chemical analysis made to serve as supplementary evidence.



Sewer In Course of Construction, Pittsburg, Pa., Showing Brick Invert.

For the purpose of chemical analysis a sample sufficiently large was obtained by breaking up two half brick and crushing them to pass the 100-mesh sieve. The disintegrated sample was allowed to flow in a small stream over a powerful magnet until all the particles of metallic iron were removed.

CLAY PIPE WINS VICTORY.

Canadian Alderman's Plan to Use Concrete Nipped in the Bud—His Material Discredited.

Some time ago, one of our Canadian subscribers wrote us, saying that the city council of Sherbrooke, Quebec, was considering the use of concrete for a job to be let there. He asked our aid in combating the influence of a certain alderman who was working hard to have concrete pipe used.

We sent considerable literature showing how utterly unreliable and unsatisfactory concrete pipe had proven in many instances in the United States and later we received the pleasurable news that concrete pipe, as well as its friend the agitating alderman, had been discredited, the contract going to the Standard Drain Pipe Co., manufacturers of salt glazed vitrified sewer pipe at St. Johns, P. Q.

While we do not wish to take any undue credit in the matter it is a source of satisfaction to know, as our informant stated, that "the articles in 'Brick and Clay Record' undoubtedly influenced the members of the council in their decision not to use concrete pipe, but to use the old reliable tested and tried—clay pipe."

The best article in the world can't hold up on sales without announcing its merits, at least in a moderate whisper when its competitor is announcing its merits through a megaphone.

POTTERY NEWS

TWO MODERN PLANTS PLANNED.

Much Money to be Expended on Plant Construction—Many Changes Announced.

It has been estimated that the Edwin M. Knowles China Co., of Chester, W. Va., and the Homer Laughlin China Co., of East Liverpool, O., will spend upwards of $500,000 in the erection of two new fifteen-kiln plants in Newell, W. Va.

The Edwin M. Knowles China Co., has recently increased its capital stock to $500,000. The new plant of this company will occupy a site at Newell measuring 285 by 700 feet, and will contain clay shops, kiln, glaze and decorating departments. The construction will consist of fire brick walls, concrete floors and felt roof. Every modern convenience in sanitation, heating and lighting will be installed. Electric motive power will be used, the current being procured from the plant of the Newell Light Co. The entire plant will be sprinkled with a dry-pipe sprinkler system. A two-phase alternating-current generator, directly connected will be installed. It is the purpose of the company to have the most up-to-date plant for the manufacturing of domestic pottery in the world.

The site of the Homer Laughlin plant will be 600 by 300 feet, and the walls of this plant will also be of fire brick construction. This plant will cost about $200,000, and the machinery alone will cost upwards of $50,000.

The officers of the Edwin M. Knowles China Co. are: President, Edwin M. Knowles, the son of Isaac W. Knowles, one of the pioneer pottery manufacturers of America; vice-president, Joshua Poole, a manufacturing potter of many years' experience, both in England and the United States; secretary and general manager, Thomas B. Anderson, who is also a practical potter; treasurer and sales manager, J. W. Irwin, who has had years of experience in this line of business. Plans are ready for the beginning of construction work on these plants and it is expected that they will be ready for operation within twelve months.

Plans for the establishment of a sanitary pottery in East Liverpool have been completed by Thomas V. Milligan, of the Chamber of Commerce. A long lease on the former plant of the General Electric Porcelain Company, in East Liverpool, has been secured by a new $50,000 stock company. W. J. Mays, a well known sanitary pottery manufacturer of Wheeling, W. Va., is interested in the new company, and will be the general manager.

Will Make Sanitary Ware.

Probably the most important event in local pottery circles since the announcement of new plants for the Homer Laughlin China Co. and Edwin M. Knowles China Co. came in the direct information from Chris Horton, active head of the Colonial Pottery Co., that this plant, situated in East Liverpool, will shortly embark in the sanitary ware business. Mr. Horton authorized this announcement, contrary to frequent denials on the part of other members of the concern, made during his absence in the East. While there, he stated that the sanitary business in Trenton, N. J., was given a thorough investigation with a view of ascertaining whether or not the change would be warranted. Mr. Horton states that facts and figures secured proved amply satisfactory.

The changing over of the Colonial and the conversion of the Ohio plant of the General Electric Porcelain Co., to a sanitary factory, under direction of J. K. Mays, well known Wheeling expert, who is to be assisted by the Chamber of Commerce, will give East Liverpool two sanitary potteries, and these, it is expected, will pave the way for more.

Robert McLane, 75 years old, promoter of the Keystone Pottery Co., of Rochester, Pa.; president of the Keswick China Co.; president of the Beaver-Brighton Bridge Co.; director in the Big Beaver Bridge Co., and stockholder in the Sixth Street Bridge Co., of Pittsburgh, Pa., died recently at his home in Rochester, Pa.

Reports from the General Electric Porcelain Co. indicate that the four plants of the company, located in East Liverpool, and New Cumberland, are working steadily at the present time, with many excellent orders in view. In all the porcelain concern is now giving employment to over 800 people. George Anderson is in charge of the Anderson plant, East End, East Liverpool, at which operations were recently resumed; William Steel at the G. F. Brunt factory, East Liverpool proper; Frank Milligan at the East End Porcelain Works, East End, East Liverpool, and Samuel Dyke at the New Cumberland branch. The Ohio plant in East Liverpool proper, will probably be leased for sanitary purposes and operated by a new company headed by W. T. May, the well known Wheeling manufacturer.

New Buildings to be Erected.

Contract for the erection of two new buildings for the Mayer China Co., at Beaver Falls, Pa., has been awarded to Barge, Frischkorn & Co. One of the buildings will be used for pottery purposes and the other as a warehouse and office. Work will be begun immediately.

Details of the proposed move by which the East Liverpool, O., Chamber of Commerce will shortly acquire a long-lease term on the Ohio plant of the General Electric Porcelain Co., to be operated as a sanitary plant, have been made public by President T. V. Milligan, of the Chamber of Commerce. Plans for the organization of a stock company to control and promote this enterprise call for incorporation with a capital stock of $50,000.

Credit Note.

It seems our correspondent was misinformed in regard to the firm which furnished the terra cotta, used in facing the Copley-Plaza Hotel at Boston, shown in our last issue. As a matter of fact, the terra cotta was made by the Atlantic Terra Co., 1170 Broadway, New York City. This company also furnished the terra cotta for the facing of the General Electric Co.'s new building at Buffalo, which our correspondent stated, was faced with sand-lime brick. Our aim is to give all firms proper credit for materials furnished, but owing to the difficulty in verifying statements made referring to work done 1,000 miles distant, some discrepancies are bound to occur despite the most watchful care.

RECENT DEVELOPMENTS IN REFRACTORIES INDUSTRY

(*Continued from Page 378*)

demands are made come from Styria and other parts of Austria-Hungary. The deposits are most carefully mined, the mineral sorted from impurities, ground, mixed sometimes with a suitable bond such as tar or in some cases with little refractory plastic clay, dried and burned several times at a high temperature. These are the most useful brick for the modern practice of metallurgy.

Chromite of Great Importance.

Of the neutral refractories chromite is of the greatest importance to the iron, copper, antimony and tin metallurgists. It is used as a buffer lining between the bath lining of magnesite and the wall lining of fire clay, preventing any reaction between the basic and acid brick. In the French antimony works it is used as lining in the reduction hearth furnaces; and in the metallurgy of tin it is, and should be still more, used for the bottom and sides of the hearth. In open hearth iron and copper furnaces which use a magnesite bottom, chromite is laid in between the hearth and the foundation of fire brick. Chromite of satisfactory quality is found in Greece and New Caledonia; some is found in California. It should be fairly low in iron and with only sufficient clay content to enable it to bond.

The use of steatite (magnesia and alumina silicate) is a comparatively modern innovation, for use principally in electric furnaces. Perhaps the most recent, or at any rate, the most satisfactory of the more recently introduced refractories is carborundum firesand or that silicide of carbon which is produced in an amorphous condition just outside the region of heat at which crystalline carborundum is produced by the combination of silicon with carbon at the intense heat of the electric arc furnace. Carborundum enjoys widespread use both as a protective paint for preserving brick against acid fume and slag and also in the form of brick made by mixing the fine carborundum with a small quantity of fire clay or lime.

Bauxite Generally Used.

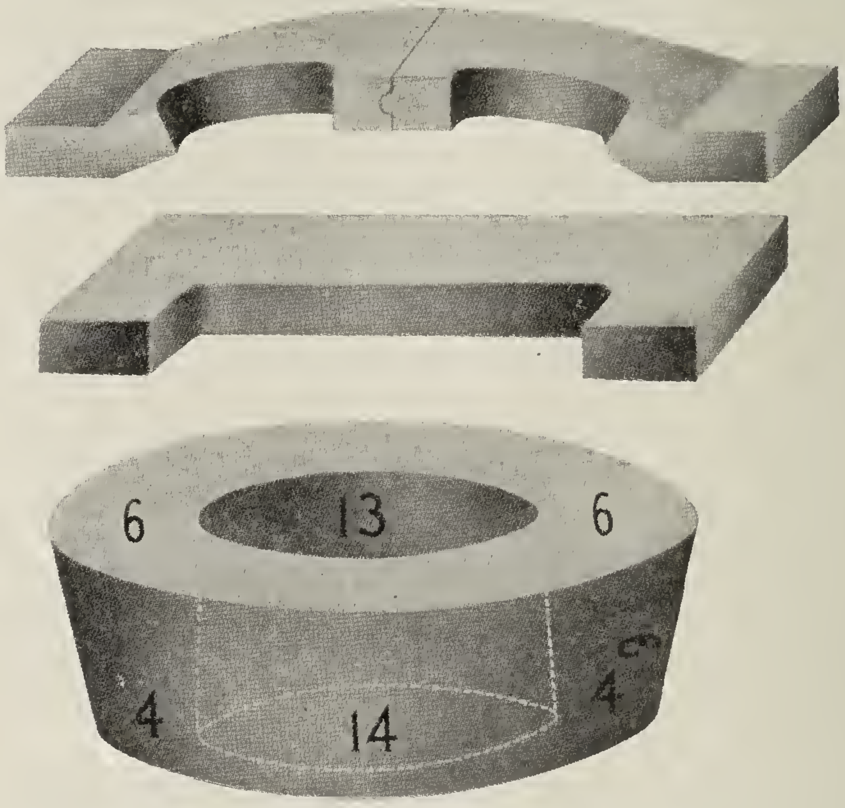
Bauxite has not come into more general use on account of its quality of shrinkage. Chemically it is very inert, it may be bonded easily into a brick of unusual strength, but in all practice known the material has shrunk sufficiently to imperil the structure in which it was used.

A. J. Aubrey (Electrochemical and Metallurgical Industry, Vol. IV, page 52) claims that bauxite brick and blocks made by the Laclede Fire Brick Co., of St. Louis, successfully stood some severe tests and he would argue the superiority of bauxite to magnesia in certain operations in the metallurgy of iron and of lead and to fire clay brick in certain industrial furnaces such as rotary cement kilns. The chief sources of the ore are in Arkansas, New Mexico, Georgia and Alabama. The crude bauxite is washed to remove some of the free silica, calcined, at cone 12, when the water of combination amounting to 30 per cent of the raw ore is expelled. The bauxite shrinks considerably, particularly between temperatures of cone 9 and cone 12. The washed, calcined, Arkansas bauxite analyses:

Mechanical water	0.88%
Silica	6.40%
Iron sesquioxide	1.43%
Alumina	87.30%
Titanium oxide	3.99%

The calcined material may be bonded with fire clay, sodium silicate or lime and made into brick or tiles, which, after burning at a high temperature in downdraft kilns, are said to be sufficiently strong to stand a crushing strength of 10,000 pounds per square inch. The calcination may be done in a rotary kiln. A brick 9" × 4½" × 2½" weighs 7.5 pounds. In a test made by the St. Louis Portland Cement Co., a lining 6" thick in a 6′ rotary kiln, 60′ long, which burned pulverized coal, was removed after a continuous run of eleven months. During the time 75,000 barrels of cement had passed over the lining and the average loss of the blocks was about 2½". It is possible that the future may develop uses in the chemical industry for this material.

Of the other neutral refractories I would refer to the growth of the plumbago crucible industry; to the wider uses given to carborundum and similar artificial compounds; to the efforts being made to realize the value of steatite; and to the Norton Company's refractories such as "Alundum."



Showing Locomotive Fire Box, Tile and Coke Oven Brick.

NEW SCHEME FOR DISPOSAL OF DEAD.

F. W. Fitzpatrick Proposes to Mold Bodies in Blocks of Clay for National Monument.

A startling new scheme for the disposal of the dead has been outlined by F. W. Fitzpatrick, well known to our readers as a consulting architect and a strong advocate of fireproof construction. He proposes that each body shall be molded into a block of clay until all semblance of form is lost. This, after burning in an intense electrical heat, is to be employed as a structural unit in a wondrous national monument of the dead. This latter is to outrank in beauty and size anything hitherto built by man. Each individual slab is to have graven deeply on its end the person's name. The scheme is a tremendous one and its basis might form a good solution of some difficulties and objections that are urged against burial and cremation.

THE PAVING BRICK INDUSTRY

AMERICAN ROAD BUILDERS' MEETING.

Convention and Congress to be Held in Cincinnati, December 3-6, 1912.

The city of Cincinnati has extended, through its mayor, its Chamber of Commerce and other organizations, an invitation to the American Road Builders' Association to hold its ninth annual convention and American Good Roads Congress in that city. This invitation has been accepted and the convention and congress will, therefore, be held in Music Hall Building, in Cincinnati, December 3, 4, 5 and 6, 1912.

The governor of Ohio has issued invitations to the governors of several states to appoint official delegates to the congress and convention and such delegates have already been named in nearly all cases.

No question is of more vital importance to the American people than that of highway improvement. Interest in the subject is already widespread, and is daily becoming more intelligent. The American Road Builders' Association, believing that the public appreciates the economic importance of good roads and is willing to pay for them, is endeavoring to emphasize the importance of expending the funds appropriated for highway improvement to the best possible advantage. The sum annually expended for road construction and maintenance is enormous, and it must be admitted that a very considerable proportion of it is used to poor advantage, if not actually wasted. Lack of foresight in the laying out of a rational and comprehensive system of highways for improvement; blunders in the selection of the type of road surface best fitted for the traffic to be accommodated, and the topographical and climatic conditions; failure to use to advantage local materials which, in proportion to their cost, will give better service than those transported great distances at correspondingly great expense are faults to be avoided.

The ninth annual convention and American Good Roads Congress will bring together in a great national body the foremost road building and paving experts in the United States and Canada. These men will meet for the purpose of discussing the many problems connected with highway and street improvement. To this congress are most cordially invited all the highway officials in each state of the United States and the provinces of Canada, the city, county, and township officials, contractors, engineers, superintendents, governors of states, legislators, free holders, farmers, automobilists and, in fact, everyone interested in the subject. This unquestionably will be the largest meeting of practical road builders ever held in the United States.

The American Road Builders' Association was organized ten years ago and is the pioneer organization of its kind. Its membership extends throughout the United States and Canada.

Bids have been opened at Harrisburg, Pa. for the building of a brick road, which will be part of the new state road. The borough will pay one-fourth of the cost, the county one-fourth, and the state the balance.

NEWS IN PAVING CIRCLES.

The city council of Sanford, Fla., is planning to pave Ninth Street west from Park Avenue to the new passenger station, a distance of eight blocks, with brick. It is hoped the work will be finished by the time the new passenger station is opened, which will be about the middle of December.

The "Mobile (Ala.) Register" states that during a recent heavy rainfall there, the wood block paving buckled, puffed out and in certain instances, was washed entirely away, the record rainfall, over 3½ in., tearing up a portion of the Spring Mill Ave. pavement at the St. Francis St. intersection.

The fitness of vitrified brick for street surfacing is being demonstrated on Powell St., San Francisco, free of cost to the city, by the Denny-Renton Clay & Coal Co., of Seattle. Brick paving, so extensively used in other parts of the country, has been little used in San Francisco, where, it is said, the city council is opposed to it.

Contracts were recently let for the construction of brick paving valued at $9,000 for the Northern Pacific Railway at Spokane, Wash.

The Board of Public Improvements of St. Louis, Mo., has recommended to the Municipal Assembly, ordinances for street improvements at the estimated cost as follows: Brick, $245,009; bitulithic, $37,106, and asphalt, $25,927.

When the work of paving the streets provided for in the eleven paving improvement contracts awarded by the City Commissioner of Mobile, Ala., on October 8, is completed, that city will have 35.8 miles of modern paved streets, or a total of 591,929 sq. yds. The number of square yards of the various classes of material which have been used in Mobile streets is as follows: Ashphalt, 122,184 sq. yds.; vitrified brick, 113,296; creosoted wood block, 275,807; granite, 26,627; granitoid or cement, 8,000; bitulithic, $46,015.

Citizens of Victor, N. Y., are discussing the material to be used in paving a stretch of road a mile long, connecting the state roads of Ontario and Monroe counties through Main St. in the city. It is estimated that this mile of pavement would cost in the neighborhood of $23,000. J. H. Kelley of Rochester, of the Monroe County Good Roads Association, is strongly urging that brick be used for surfacing the road.

Our St. Paul correspondent states that Mayor Keller, of St. Paul, recently returned from an extended tour of eastern cities, where he was investigating the paving proposition. On his return, he declared that the city must follow a more liberal policy with reference to paving and must do more each year. It seems that Mayor Keller is an adherent of creosoted wood block, as a result of his tour. St. Paul has a fair amount of brick pavement but it was all laid a number of years ago, the amount of brick block laid in recent years being comparatively small, although for the grades and the heavy traffic streets of the city, nothing has been found to compare with properly laid brick block pavements.

The paving of Cherokee street, at Leavenworth, Kan., with Leavenworth brick, has been completed, and the street presents a fine appearance, of which the property owners may well be proud.

Although the paving season is almost over, there are still some contracts being let throughout the country. Among those recently let was for a street at Steubenville, Ohio; at Greensburg, Ind., a brick and macadam contract has been let, amounting to about $23,000; 1.93 miles of brick pavement are to be let at Springfield, Ohio; .77 miles at Wadsworth, Ohio, and at Laurel, Miss., 18,000 yards will be paved with either brick or wood blocks. At Assumption, Ill., a contract for 6,572 square yards of brick pavement, to cost $15,117, will be let. At Dubuque, Iowa, 10,000 square yards will be paved with vitrified brick. At Tomah, Wis., a contract was let October 10 for brick pavement; at Decatur, Ind., the city council has advocated building three more brick streets; at Des Moines, Iowa, Elm street will be paved with vitrified brick; an ordinance was recently passed at Camden, N. J., directing the paving of Lemmon street with vitrified brick; estimates have been made for the paving of a country road in Elizabeth county, Virginia, between Hampton and Phoebus, with vitrified brick and concrete curbing, at a cost of $15,624, and at Milwaukee, Wis., bids were recently opened for the paving of a number of brick alleys.

HOW NEWLY WED WAS LED TO USE BRICK FOR HIS HOME

(*Continued from Page 376*)

and learned more of the various kinds of fancy face brick and had an altogether satisfactory call. I heard few new points but by this time I was fairly well informed on the subject of building materials.

Jane and I studied the pamphlets I had collected and while I believed I had learned much on the subject of the various kinds of building materials, we increased our fund of knowledge by reading this literature and discussing it.

To my surprise we found many reasons in favor of brick in these pamphlets that we never before had heard.

Brick's Strong Points Summarized.

Summarizing the information in the advertising pamphlets we collected I found these strong points about brick:

It guards against fire loss.

It saves excessive repair costs.

It prevents rapid depreciation.

It gives comfort—warmth in winter; coolness in summer.

It requires no painting.

It does not decay.

Of all types of construction it is the most beautiful.

Its first cost is slightly greater than others, but it is warranted.

It is the most economical in the end.

Its "up-keep" cost is small.

A brick house is more salable than any other; it will bring $1,000 more than frame or concrete.

It is more durable—a brick house is substantial; it "speaks for itself."

It can be heated more cheaply—33 1-3 per cent less than a frame house.

It is the most artistic.

Brick has a known pedigree back to the day 3,000 years before Christ.

Great masters of architecture had established ideas of beauty in brick construction, centuries before the Greeks perfected the structure of marble and stone.

The simple block of burned clay has held its place throughout the ages.

It is best for both the millionaire's palace and the modest man's home.

Brick suggests permanency and other qualities that should be associated with the home—hospitality, warmth, comfort, beauty.

Brick "grows old beautifully"; it never reaches a state of decrepitude.

Brick comes from "the bosom of mother earth in the form of plastic clay"; it is hardened by the most powerful agency known—fire.

Brick is proof against further attacks of fire; it defies wind and rain; it is as enduring as earth itself; it enters into use in 75 per cent of the buildings in large cities and its use is steadily increasing in smaller towns and country districts.

One can borrow more money on a brick house; the rate of insurance is less.

Brick is simple to handle; in masonry, there is less chance for hidden flaws; it guards against frozen plumbing; it is the best investment; it is safe.

My wife and I weighed these points carefully before we made a final decision.

"It's hard to get around those arguments, isn't it?" she asked. There was no use for me to reply—the answer was apparent.

"But tell me," she asked, turning to me with a puzzled look, "Why is it the brick people make it so hard for anyone to get these facts?"

I must confess I could not answer her. The only solution I could give was that the brick manufacturer was "sleeping at the switch." I am a reader of the daily papers and the magazines and I seldom see anything about brick for building purposes. On the other hand, the cypress lumberman and the pine lumber fellow and the concrete man fill us newlyweds up with his arguments and they sound pretty good to a fellow who has never investigated the building material question.

My wife gathered up the little booklets that lay spread on the table and tucking them carefully away in a drawer, she turned to me.

"Which shall it be?" I smilingly asked.

Jane looked surprised.

"Surely," she said, "the house in which the couple in fiction 'lived happy ever after' was built of——"

"What?" I asked, knowing full well the answer.

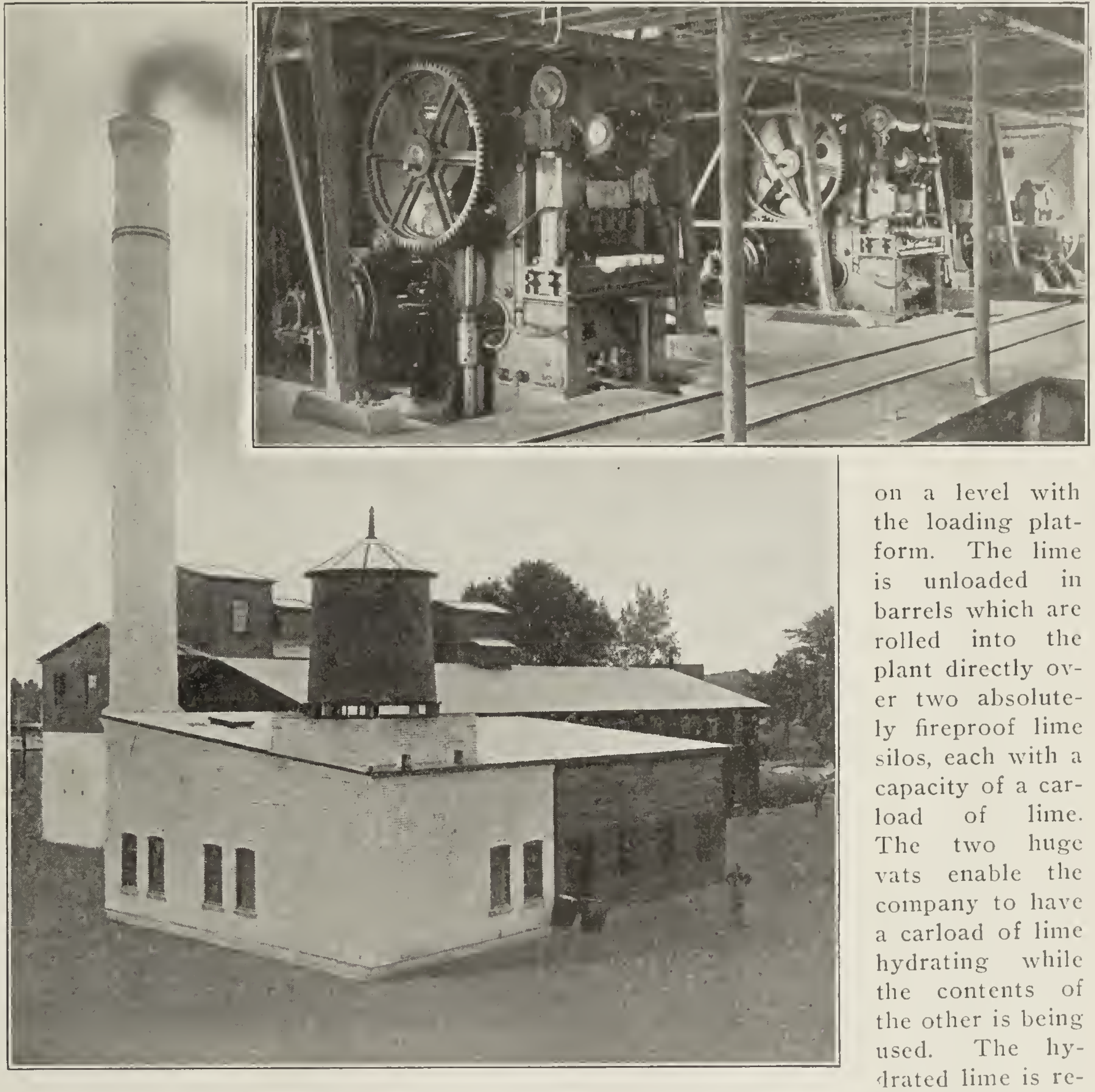
"Brick," she said, smiling.

And brick it is going to be.

UP-TO-DATE MASSACHUSETTS PLANT.

Well-Equipped—Well-Arranged. It is a Model Sand-Lime Plant.

The new plant of the Worcester (Mass.) Sand-Lime Brick Co. is one of the latest additions to the industry and it is considered one of the best arranged and equipped in the country. Because of the great demand for building material and the inadequate supply, locally, the new company expects to reap a harvest. As an indication of the field it serves, the company points to enough orders booked ahead to keep the plant busy for many months to come.


Showing a Portion of the Plant of the Worcester Sand Lime Brick Co. and the Two Brick Presses, With a Capacity of 20,000 Each Daily.

The company is composed almost entirely of local capitalists. The officers follow: President, Marcus L. Foster; vice-president and treasurer, F. Lincoln Powers. Directors, Frank H. Hunter, Hartford, Conn.; Charles Firth, Lyman F. Gordon, Edward J. Cross, Robert L. Prentice, and A. B. Davidson.

The plant consists of a main factory building of frame construction, 35 feet by 95 feet, two stories high; a sand screening and lime hydrating plant, 25 feet by 30 feet, three stories high, of frame and brick construction; a power house, 50 feet by 30 feet, of brick and frame construction; and a sand-lime brick stack, 85 feet high with a 42-inch flue.

A siding from the Webster branch of the Boston & Albany Railroad, 900 feet long, runs into the grounds and along side of a newly constructed, substantial loading platform, which extends nearly 200 feet on the northerly side of the building.

The buildings were completely remodeled, new floors laid and heavy girders placed to admit of the installation of the new equipment.

The arrangement of the various departments of the plant, is said to combine the good features of a half-dozen similar plants erected by the company in as many years. Every department and every machine has been so located that the making operation is a continuous one without any unnecessary handling or moving of the product. From the time the sand is screened, the lime hydrated and the mixture set to churning in the huge mixers the operation is continuous until the finished product appears.

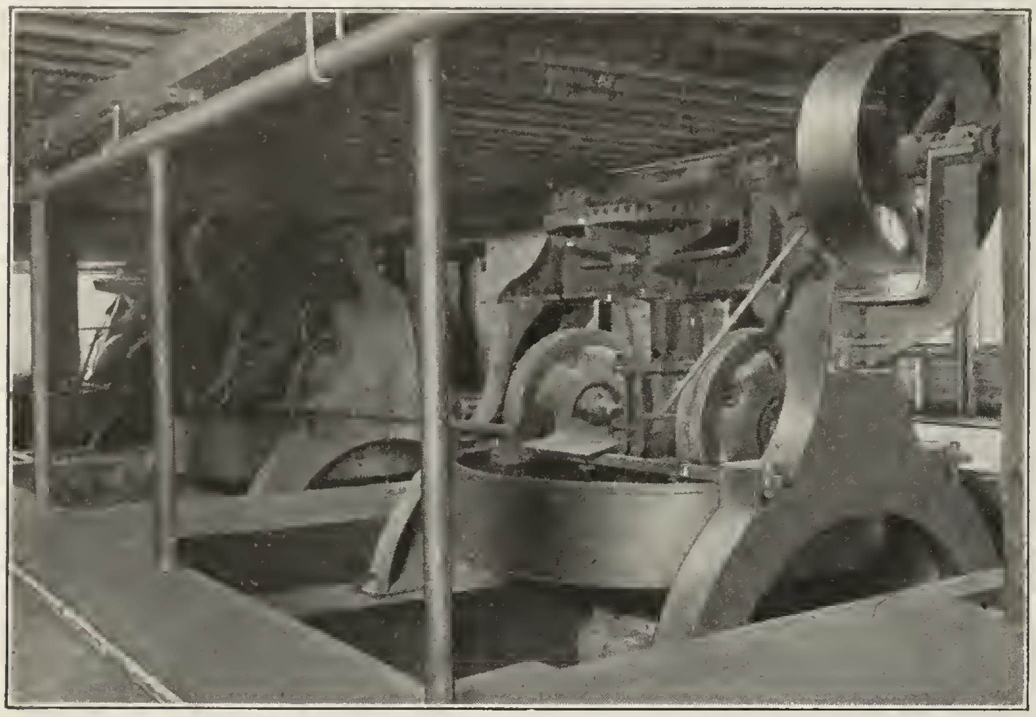
The sand will be secured less than ten feet from the building, on a level with the ground floor of the plant. The cars will be run to the huge bank of sand from tracks which extend from the building. When filled they are returned to the building, transferred to an elevator and carried to the second floor, where the sand is screened and allowed to pour down into the huge mixing machines. The lime hydrating plant is close by on the second floor, on a level with the loading platform. The lime is unloaded in barrels which are rolled into the plant directly over two absolutely fireproof lime silos, each with a capacity of a carload of lime. The two huge vats enable the company to have a carload of lime hydrating while the contents of the other is being used. The hydrated lime is removed to the silo on the ground floor, within five feet of the mixing machines. This particular building of the plant is entirely new, and was designed under Mr. Hunter's personal supervision.

All of the brick making machinery is located on this ground floor of the plant, and was supplied by the American Clay Machinery Co., of Bucyrus and Willoughby, Ohio.

Lined up on one side are three huge mixing machines, massive structures which churn the sand and lime together much after the manner of kneading bread. Directly across an aisle, left vacant to permit the passage of hand cars on tracks, are located the brick pressing machines, two with a capacity of 20,000 bricks each in ten hours, and a third for high-grade facing brick, which has a capacity of 14,000 bricks in a similar period.

The power plant of the factory is thoroughly modern and of sufficient capacity to provide for future growth. The boiler room, made of sand-lime brick, is as near fireproof as is possible to make it, and as an additional precaution, it is separated from the main factory building by a fire-wall of sufficient thickness to stand in any emergency.

The equipment in the boiler room consists of two 150-horse power Stewart boilers. Apparently the company has faith in its product for boiler lining purposes for both of the huge boilers are walled and lined with sand-lime brick. In this room is also located a water gauge which connects with a water reservoir on the roof of the building and which registers to a gallon the amount of water on hand. This reservoir is fed by means of a modern power pump, from a brook, which passes close to the boiler room.


Massive Mixing Machine at the Plant of the Worcester Sand Lime Brick Co.

Adjoining the boiler room is the engine room, cut off by another fire-wall where one of the latest type Fitchburg engines of 175-horse power has been installed. Here is also located the pumping plant of the factory, consisting of two Blake pumps, each of sufficient daily capacity to serve the wants of a factory half again the size of the present one. It is intended to have one of these pumps in reserve at all times, so that if one breaks down the other will be ready for use, at an instant's notice.

The gauges and recording devices of the hardening cylinders are set up here, the delicate mechanism showing the night engineer at a glance the amount of steam and pressure in each cylinder, and at the same time tracing a complete hourly record for the ten hours, which can be removed and read the following day.

The transmission of the plant is considered ideal. The main drive consists of a 79-foot belt running from the engine fly wheel to the second floor of the main building, where it connects with the shafting of the brick making machinery of the floor beneath.

According to the present plans of the company the plant will be started at practically its full capacity. Already it claims to have many sizable orders on its books, all of which came unsolicited and for early delivery of brick.

For local delivery it is proposed to use heavy automobile trucks which will enable the company to unload brick in Worcester for $1 per thousand against a delivery charge of from $1.90 to $2.25 which it costs for brick delivered on the cars in this city.

ANNUAL SAND-LIME MEETING.

Toronto, Can. Selected as Best Place to Hold International Meeting.

A call to members of the American Association of Manufacturers of Sand-Lime Products has been sent out by Secretary W. E. Plummer, Jr. of Buffalo, to attend the regular meeting of the association, to be held in Toronto, Canada, Dec. 3rd and 4th, 1912. A number of matters of general interest to all members will be discussed and an enthusiastic meeting is anticipated. The association has a number of Canadian members and the coming meeting is the first one to be held outside of the United States. It marks the international character of the organization and it is hoped that a large number of Canadian members will be present. It goes without saying that the members from the United States are sure to be on hand.

The sand-lime manufacturers in the far West have never joined actively in the work of the association and it is hoped that this year will prove an exception and that they will join heartily in the work which cannot help but prove of advantage to all manufacturers of this product. It is no more than right that all should join in the work which is for the general benefit of all sand-lime brick makers.

The Southern Pacific Hospital Job.

Through misinformation, the statement was made in our October 1st issue that the sand-lime brick used in the construction of the Southern Pacific Hospital Building were furnished by the Sacramento (Cal.) Sandstone Brick Co. Later advices are that the brick were furnished by the Golden Gate Brick Co., of San Francisco. We are glad to make the correction and set the matter straight before our readers. Both companies are doing a large business and supplying some large orders for prominent buildings in the west, the Carnegie library building at Salinas, Cal., being one of those for which the Sacramento Sandstone Brick Co. furnished its brick.

Carnegie Library Building at Salinas, Cal., Faced with Sand Lime Brick Made by the Sacramento Brick Co.

RECENT INVENTIONS of CLAY MACHINERY

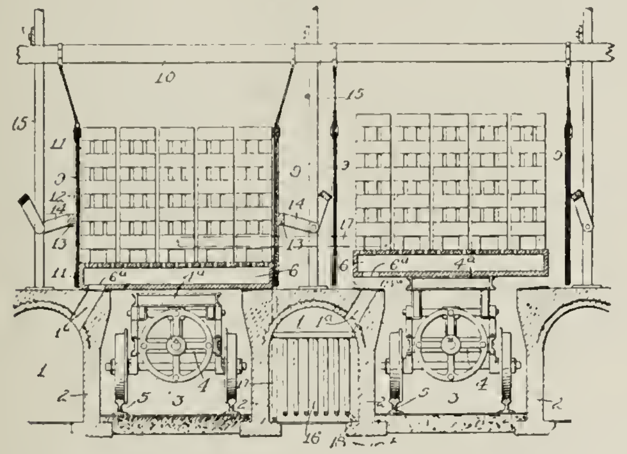
Up-to-date Time and Labor-Saving Devices Reduce Cost of Producing Burned Clay Building Materials

By keeping in close touch with all the newest methods and inventions the progressive manufacturer serves his own interest. Yankee inventive genius has done much to improve industrial conditions and it is this constant, ceaseless striving to reduce man's labor and the cost of production and increase the output to satisfy an ever-increasing demand, that has put America in the front rank in the march of progress.

1,026,558. APPARATUS FOR DRYING BRICK. John C. Boss, Elkhart, Ind. Filed July 8, 1911. Serial No. 637,582.

In a brick drying apparatus, a plurality of parallel hollow walls forming drier ducts provided with exit ports terminating in the upper faces of the walls near the edges thereof, a series of pallets for supporting the brick, and having their ends resting on and supported by said hollow walls which pallets have openings in their upper faces for the passage of air to the brick, and have also openings in their under faces communicating with the ports in the drier walls.

In a brick drying apparatus, a plurality of parallel hollow concrete walls forming drier ducts provided with exit ports terminating in the upper faces of the walls near the edges thereof, a series of pallets for supporting the brick, and having their ends resting on and supported by said hollow walls which pallets have openings in their upper faces for the passage of air to the brick and have also openings in their under faces communicating with the ports in the drier duct walls, and underground connecting ducts leading from a source of supply of heated air to the bottom of the drier ducts.

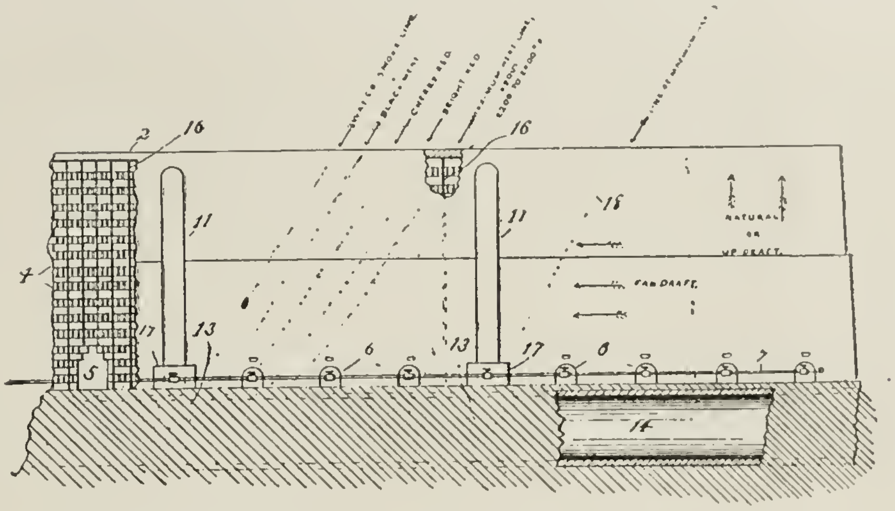


The combination with a brick drying apparatus having means for supporting a pile of brick and means for forcing a drying medium vertically therethrough, of a plurality of movable shields adapted to be held against opposite sides of the pile of brick, said shields being freely suspended from their upper edges, and co-operating movable clamping devices for holding the partitions pressed against the side faces of the pile of brick.

1,008,300. PROCESS OF BURNING BRICK. Julius H. Bach, Chicago, Ill. Filed Jan. 13, 1911. Serial No. 602,484.

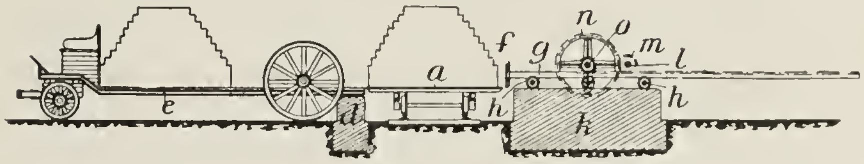
The method, substantially as described, of burning porous brick in a kiln, which consists in firing the brick in a given zone in the kiln to a predetermined degree of heat, advancing the heat in the kiln by forced artificial draft from a predetermined advance zone, forcing the firing in the burning zone to insure a maximum degree of heat in the brick by the time the carbonaceous matter therein is entirely consumed, holding the vapor back in advance of the fire to prevent premature dissipation of heat energy and successively advancing the draft and firing zone throughout predetermined sections of the kiln while maintaining the vapor and heat zones in a substantially constant relation to each other.

The method, substantially as described of burning porous brick in a kiln, which consists in firing the brick in a given zone in the kiln to from about twenty-two hundred to about twenty-four hundred degrees Fahrenheit, advancing the heat in the kiln by forced artificial draft from an arbitrarily selected zone in advance of the heat, forcing the firing in the burning zone to insure the desired degree of heat in the brick by the time the carbonaceous matter therein is consumed, holding the vapor at a distance in advance of the maximum heat of from about five to about eight feet and in a rearwardly and upwardly inclined plane so that a portion of the vapor may be above the fire and successively advancing the draft and firing zones throughout predetermined sections of the kiln.



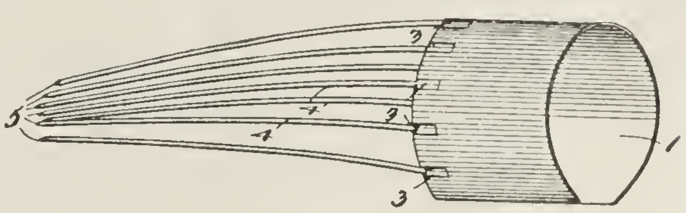
1,011,019. BRICK-CONVEYOR. Waldemar Bomhoff, London, England. Filed Sept. 21, 1910. Serial No. 583,099.

In apparatus for shifting brick from one truck or wagon to another, the combination of a straight track along which the truck can travel, a plunger movable from one side of the track over, and close to, the floor of the truck in only a direction perpendicular to the track, a wagon movable perpendicularly to, and at the opposite side of, the track, and an abutment at the same side of the track as the wagon, the said abutment being of such a height as to allow the tail end of the wagon to pass over it, and at such a distance from the track as to arrest the approach of the wagon to the track when the said tail end is close to the adjacent edge of the floor of the truck, and the floors of the truck and wagon being in the same horizontal plane.



999,106. TILE AND SEWER-DRAIN PROTECTOR. Martin N. Hagaman, Luther V. Smiley and George W. Hall, La Fayette, Ind. Filed Oct. 15, 1910. Serial No. 587,265.

A tile and sewer drain protector comprising a body formed of a strip of sheet metal having one end edge provided with regularly spaced seats, said body being adapted to be rolled into tubular form, and penetrating prongs or pins carried by and projecting from said seats.



A tile and drain protector comprising a body formed of resilient material adapted to be rolled into cylindrical form, said body having seats formed on the outer surface of one end thereof, and penetrating prongs carried by said seats.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

The development of the South and Southeast in the past ten years has been little short of marvelous, the value of the manufactured products in those sections having increased more than one hundred per cent in the past ten years, according to the report of the census bureau. Of the 521 new industrial plants established in the Southeast during the fiscal year, ending June 30, 1912, according to the Industrial Department of the Southern Railway, 27 were brick plants.

The Industrial Car Co. of West Park, Cleveland, O., announces that it has changed its name to the Electric Locomotive & Car Co. They are paying especial attention to electrical work, J. P. Copland having charge of that branch of the work. He will be pleased to make designs and estimates and as his ability is well known to the trade, he needs no further introduction. The other lines of work will be carried on by the company the same as heretofore as there is no change in the ownership, the officers being the same as before.

Los Angeles, Cal., has been experiencing a brick shortage, but it is confidently predicted in building circles that the shortage will soon be over. This is said to be the first time in the history of Los Angeles that such a shortage has been experienced, and as brick manufacturers are planning to increase their output, it is not probable that there will be a repetition of the trouble.

The Simons Brick Co. of Los Angeles, Cal., is installing new machinery and equipment at its plant at Simons and the output of the yard will soon total 360,000 brick per day. It is announced that the company is planning to increase the capacity of all its various plants.

A picture of the plant of the Dickinson (N. D.) Fire & Pressed Brick Co. is being used by Ginn & Co. of Boston in a new school geography which they are getting out.

The Los Angeles (Cal.) Pressed Brick Co. has recently booked a number of orders, including transparent cream enameled brick for business buildings at Yuma, Ariz., and cream pressed brick for a large business block at San Diego. This company is also furnishing mission tile for roofing a large store building of the Miami Copper Co. of Miami, Ariz.

The Clearfield Sewer Pipe Co. of Clearfield, Pa., has plans ready for the constructon of its new five-story plant. The main building will be 128x290 feet ,with an auxiliary building 64x120 feet. Modern clayworking machinery will be installed in addition to a number of gravity carriers, an automatic sprinkler system, etc.

The Albany Clay Products Co., Albany, N. Y., incorporated some three months ago, will begin building operations on a tract of 350 acres north of Renssalaer along the river. Terra cotta, brick, tile, fireproofing and other clay products will be produced.

The San Pedro Brick Co., San Pedro, Cal., is rushing things at its plant in order to fill its orders before the rainy season sets in. They are making 35,000 brick per day and since the 24th of July, have made two million brick.

At the regular meeting of the Illinois Brick Co., Chicago, Ill., President Schlake stated that "this year's business would exceed that of last year, when the company experienced one of the best years in its history."

At the recent "Made in Minneapolis" Exposition, at Minneapolis, Minn., a number of clay product companies were well represented. The exhibit was most creditable and created considerable interest on account of the display of various methods of fireproof construction. The companies exhibiting were as follows: Minneapolis Brick & Tile Co., common brick and hollow building tile; Northwest Fire Proofing Co., hollow tile fireproofing; Minneapolis Clay Product Co., common and hollow brick; M. Anderson Brick Co., common brick; St. Anthony Brick Co., common and hollow brick; J. M. Jagger Brick Co., common brick; Flour City Brick Co., common brick; Krefting & Benson, common brick; S. G. Johnson & Co., common brick; and the Minneapolis Sand Lime Brick Co., black, white, yellow and natural color sand lime brick.

Notwithstanding that between 40 and 50 carloads of Coffeyville, Kans., brick have been shipped into Topeka, the paving contracts there have been delayed because of lack of brick, on account of the shortage of freight cars. The Capital City Brick Co., which had the contract for the brick paving, laid most of the work with "Topeka-made" brick, but the plant was unable to turn out the brick fast enough.

S. L. Alexander, a brick manufacturer, died recently at Centralia, Wash. Mr. Anderson formerly lived at Fond du Lac, Wis., where he operated a brick plant for many years.

It is said that the Standard Oil Co. of Indiana will be no longer able to supply the fuel oil required by Chicago manufacturers of brick, steel, glass, etc. It is said that when the Standard Oil Co. is out of the field, the price of fuel oil in Chicago will be practically prohibitive.

The Denver (Col.) Mantel & Tile Co. has closed contracts to furnish the tile for the new $45,000 Elks Club Building at Grand Junction and for the Fruto Bank Building.

The Clay Products Co. of Spokane, Wash., of which T. McDougal is superintendent, has recently installed an insulator press at its plant, which is one of the largest of its kind in the West.

What is said to be the largest round-house in the world was recently completed at Port Carbon, Pa., for the Reading Railway Co. The round-house covers a tract more than 400 feet square and in its construction 781 carloads of brick, steel and concrete were used.

The railroad commissioners of Texas will have a hearing on Nov. 12th at Austin, Tex., to consider a readjustment of the rates applying to hollow building tile in carload lots.

W. H. Gorsline has sold his interest in the Rochester (N. Y.) Sewer Pipe Co. and the Rovaque quarry tile business. While Mr. Gorsline is interested in the real estate business, we understand that he expects, later, to re-engage in the clay business.

The Calhoun Brick Co. of Atlanta, Ga., says that business has been good with them all the year and is getting better all the time. They have experienced some difficulty in delivering orders on account of the car shortage due to unusually heavy shimpents of cotton.

N. Ellery, manager of the Brick Builders' Bureau, of San Francisco, Cal., says they have a strenuous fight on there, as there is a great deal of concrete used, but already much of it is showing signs of weakness.

On the 1st of November the Springfield Paving Brick Co. changed ownership but not name, and it will continue, as heretofore, manufacturing paving brick at Springfield, Ill. The new offices are at 502-503 Farmers' National Bank. The new board of directors consists of T. J. Armstrong, Peter Henderson, Edward D. Keys, Logan Hay and Sarah Armstrong. The officers are: T. J. Armstrong, president; Peter Henderson, vice-president, and Edward D. Keys, secretary and treasurer. Messrs. Armstrong and Henderson, of Bloomington, are the principal stockholders. The former president, A. L. Converse, retires.

Walter M. Pratt, drain tile manufacturer, with plants at Mendota, Earlville and Triumph, all in Illinois, was in Chicago during the week ending Nov. 9, buying supplies.

A petition in bankruptcy has been filed against Ladd-Birchy Fire Brick Co. at Fort Payne, Ala. A receiver will take charge of the business. This plant, which has been shut down about a year owing to a controversy between members of the firm, will resume operations, we are told, as soon as business matters are settled.

A. L. Childers of Seneca, Kas., has gone to Wahoo, Neb., to take charge of the brick plant there.

The Okmulgee brick plant located at Gaither, Okla., is being overhauled and put in shape for an early resumption of business.

The Canton Pressed Brick Co., Canton, O., has changed its name to the Belden Brick Co.

The firm of Heinish & King, which operates a brick plant at East Portsmouth, O., will be dissolved. Mr. Heinish will take over Mr. King's holdings and it is said the plant will be placed on the market at once by Mr. Heinish.

The property of the Springfield Paving Brick Co., Springfield, Ill., has passed into the hands of Bloomington parties. The company will be reorganized in the near future. Ed. D. Keys and Logan Hay of Springfield still remain in the company, but T. J. Armstrong of Bloomington purchased the remaining $85,000 stock. Mr. Armstrong will have charge of the plant, which will be improved considerably.

At the State Fair recently held at Phoenix, Arizona, the Tucson Pressed Brick Co. had a creditable display of pressed brick, made from a volcanic shale found near Tucson. A number of prominent buildings in Phoenix, Tucson and other Arizona towns are faced with brick made by this company.

The Lewistown Brick & Tile Co., Lewistown, Mont., of which John Gretencort is manager, informs us that business has been very good with them this year. They have sold all the brick they could make with their six-track dryer and they now have under construction an addition of seven more tracks to their dryer, and three 28-foot round kilns. They are looking forward to a good year in 1913.

The past season has been the best in years, according to the reports of the brick manufacturers at Mechanicsville, N. Y. The demand exceeded the supply, but prices were not increased to any great extent.

The Texas and New Orleans R. R. Co. has been obliged to add over 1,000 feet of new track at Athens, Tex., on account of the increase in freight. Clay products is one of the chief products shipped from Athens.

In the estimates of the cost of constructing a first-class office building in the total of over a million dollars, brick work was listed at $56,222, terra cotta $40,000, fireproofing $38,865, while carpenter work alone amounted to $117,000.

Hamilton County, Ia., has drainage in 16 of its 17 townships. The work aggregates in value about $1,500,000 in outlet drains.

The Continental Brick Co. of Aledo, Ill., has opened its re-habilitated plant under most favorable conditions. The shale, of which the company owns an immense deposit some seven miles from its plant, produces fine brick in a large variety of shades and colors. The new brick machine, recently purchased, will double the making capacity of the plant, and with the machine formerly in use makes a total capacity of 120,000 brick per day. A party of prominent brick men recently visited the new plant as guests of Manager Buckley, among the number being the following: Thos. Moulding, president Thos. Moulding Brick Co., Chicago, Ill.; L. D. Binyon, president; H. L. Matz, vice-president; H. O. Binyon, sales manager, S. S. Kimbell Brick Co., Chicago, Ill.; F. W. Butterworth, general manager, J. H. Reeves, chief clerk, Western Brick Co., Danville, Ill.; F. E. Dever, sales manager, Rickertson & Schwartz Brick Co., Milwaukee, Wis.

The Brazil (Ind.) Hollow Brick & Tile Co. is manufacturing a special silo block. The drawing for the block was made by J. B. Davidson, professor of agricultural engineering of the Iowa State College, at Ames. The block has channels on each side to hold the mortar and steel reinforcement.

The Illinois Brick Co. of Chicago has purchased two Pierce-Arrow motor trucks for delivering its products.

According to all reports, there is still a great scarcity of brick in the Montreal district, and the local yards there have more business than they can handle. Brick is now in great favor, in Canada, as compared with a few years ago, and to supply the demand large quantities have been imported from the United States.

NEW PLANTS AND ADDITIONS.

The W. S. George Pottery Co., East Palestine, O., has increased its capital stock from $300,000 to $500,000.

The American Enamel Brick & Tile Co., a New York corporation, has increased its capital from $100,000 to $200,000.

The Nock Fire Brick Co. was recently incorporated at Cleveland, O., with a capital stock of $25,000, by Chas. H. Nock, Alonzo M. Snyder and E. I. Young.

The American Volsam Co. of Bangor, Me., has leased property on which it plans to erect ornamental buildings in which art pottery, tiles, etc., will be manufactured. A school of ceramic art and a testing laboratory will also be established in the building which it is expected will be erected at a cost of about $30,000. The company has purchased at Howland, 34 miles from Bangor, a large farm, underlaid with practically inexhaustible deposits of clay.

On Oct. 23d a $40,000 fire wiped out the plant of the Richard C. Remney Son Co., Hedley and Delaware avenues, Philadelphia, Pa. The loss was entirely covered by insurance and the company expects to rebuild at once. As the molding and machinery buildings were destroyed, a complete machinery equipment will be required.

Incorporation papers have been filed by the Windsor Brick & Tile Co., Windsor, Mo. The company will move a plant, which was formerly located at Walnut, Kas., to Windsor, Mo. Employment will be given to about 100 men, the plant having a capacity of 150,000 per day.

The plant of the Ferris Brick Co. at Ferris, Tex., was totally destroyed by fire Oct. 23d. The loss, which is estimated at $20,000, was partly covered by insurance. The work of rebuilding the plant is progressing rapidly.

It is understood that the Kerr Brick Co., Salina, Pa., has purchased clay lands near Kittanning and will erect a model plant thereon.

The Globe Clay Works of New Comerstown, O., is planning to add a new 150,000 capacity kiln and seven new dry tunnels to its plant.

Mumma Brothers, manufacturers of drain tile and building brick at McGill, Ohio, are contemplating installing an oil burner for burning tile in 24-ft. round down draft kilns.

The La Prairie Brick Co., 10 Victoria Square, Montreal, Canada, is desirous of getting into communication with a capable consulting brick engineer in the United States.

Fire, of unknown origin, practically destroyed the entire plant of the Delaware Terra Cotta Co. at Wilmington, Del., causing a loss of $25,000. The insurance amounts to $10,500.

The East Jordan Clay Products Co., East Jordan, Mich., is planning to install a steam or gas engine for handling clay from the pit to the plant.

The Woodland Clay Co., Woodland, Ill., has increased its capital stock to $100,000 and will increase its plant's capacity.

We are advised that Solomon Weaber of Allentown, Pa., is contemplating the establishment of a brick plant there.

Jas. Breckendorff of Petersboro, Ont., is said to be considering the building of a brick plant at Calgary, Can.

A movement is on foot to establish a brick plant on the Civic Industrial Farm, Yonge street, Toronto, Can.

The Indiana Brick Co. is planning to rebuild its plant on the site of its old plant at Anderson, Ind. We understand the machinery will be operated with a 220-h. p. motor the power to be furnished by the municipal light plant at Anderson.

NEW YORK.

New York, Nov. 11.—Dealers' and distributors' representatives are touring the North river brickmaking district to ascertain the size of the reserve stocks in manufacturers' sheds. Their reports are due to be received by the latter part of this month, at which time the real strength of the winter market will be finally determined.

Our correspondent's estimate, based upon weekly arrivals and sales of cargo loads of Hudson river common brick in this market since January 1, gives a total production in the district of 1,000,000,000 for 1912. Of this amount about 100,000,000 came into the market by schooner or rail. Approximately 487,000,000 cleared through the wholesale docks in bargeload quantities, leaving 368,000,000 brick now in shed and representing the winter supply.

In the Raritan river district, production during the last season was about seven-eighths of capacity in the common brick department. This is somewhat of a surprise to New York consumers, since it has been generally believed that the demand for Raritan river brick this year had been exceptional. As a matter of fact, this has been the first year since 1906 that the Raritan district has come so near a capacity yield and it bespeaks a wonderful development corresponding to a gain in sales in the Metropolitan district for last year of approximately 27 per cent over normal.

In the Hudson river district production has been at about five-eighths of capacity, not taking into account the Hackensack district in this computation. The falling off in sales from January to November is shown in the following statistics for wholesale transactions at dock, New York, from January to November of 1910, 1911 and 1912:

1910		1911		1912	
Arrived	Sold	Arrived	Sold	Arrived	Sold
2,877	2,668	2,429	2,362	1,780	1,624

These figures, covering only open barge sales, represent for the three years, respectively, 800,400,000 brick; 708,600,000 brick and 487,000,000 brick coming into this district.

The average price obtained for Hudson river common brick during the first forty-three weeks in 1910 in this market was $6.07 per M.; for the same number of weeks in 1911, $6.25 per M., and during a corresponding period in 1912, $6.89. Upon these averages the value of Hudson river common brick coming into this market during the first forty-three weeks in the last three years show the following shrinkage despite the gradual increase in price:

1910	Value at New York	$4,585,428
1911	Value at New York	4,428,750
1912	Value at New York	3,318,908

What is the reason for this falling off in demand and net income to the manufacturer?

The question is everywhere being asked. It is a fact that the selling season has been a fairly good one, but only by comparison with the bad selling seasons of many previous years. The Hudson river brick manufacturer is in a fair way to reap a larger return upon his investments than he has ever known before, first, because of the return to popularity of brick as a building commodity; second, because the selling system now followed in New York is a step toward greater efficiency in brick selling than the old, time-worn methods prevailing here in the not distant past, and third, because the quantity of available brick on hand, up the river, will be below the demand and higher price levels running from fifty cents to a dollar a thousand over existing quotations, plus covering charges, will prevail before the next brickmaking season begins.

The manufacturer in the Hudson river district has been on trial this year before the consumers of the east, and he has been expected to prove his innocence of any intent to defeat the objects of the anti-trust law. Naturally consumers desiring to get brick have not been willing to tie up with producers that might be declared illegally constituted and might be confronted with dissolution. Of course, there have been some consumers who have had perfect confidence in the stability and faith in the constitutionality of the selling company's charter and who have done business all their lives with the manufacturers comprising the company. These have been the takers of the 487,200,000 Hudson river common brick that have come into this market during the year.

But there have been others who have thought differently and rather than take a chance they have thrown the purchase of the missing 200,000,000 brick, which they would under normal circumstances have purchased from the Hudson river district, into the Raritan river field.

Yet a canvas of the Eastern brick manufacturers shows general satisfaction with the last selling season. A scarcity of labor has made it well-nigh impossible to produce brick as fast as a normal open market would have called for it and had not manipulation been such a factor in this market during 1912 it is entirely probable that the market price of common brick would have advanced to levels much higher than those now prevailing. "Brick and Clay Record" contemplates publishing a more complete analysis of the Eastern brick situation in its January 1 number.

The total quantity of common brick in the Hudson river sheds at this time (November 11) is estimated to be 413,000,000. Deducting 35,000,000 for contract brick, held on time delivery, or for covering reserves in the New York harbor during the winter, leaves only approximately 368,000,000 available for open sales.

Based upon actual steel tonnage due to be delivered in this district between now and February 1, or approximately 2,200,000 tons, exclusive of bridge requirements, on which an average of 300 brick to the ton may be figured, about 600,000,000 brick will be needed.

Much of this brick has already been engaged on the approximate allotment of three-fifths to the Hudson river district and two-fifths to the Raritan river interests. In round numbers this means that of the 368,000,000 brick now available up river, there is a definite, prospective market for 360,000,000 and advices from the New Jersey plants seem to indicate that the reserve supply of common brick on hand leaves a very strong probability that when the current demand for the other two-fifths of the required 600,000,000 has been supplied there will not be much brick available for early spring building requirements.

INDIANA.

Indianapolis, Ind., Nov. 10.—Special Examiner Markley of the Interstate Commerce Commission held a hearing in this city recently on the question whether the proposed freight rates on sewer pipe and drain tile from points in Indiana to Illinois territory shall be permanently held up. Some time ago railway companies in Central Freight Association territory filed notice of an increase of from 5 to 10 per cent. in the sewer pipe and drain tile rates, but the Interstate Commerce Commission suspended the increase until February 28, 1913. About fifteen manufacturers of sewer pipe and drain tile and representatives of the Indiana Manufacturers and Shippers' Association appeared at the hearing. It probably will be some time before a decision is reached.

The Indiana appellate court has reversed the decision of the Fountain County Circuit Court in the case of William T. Osborn, a laborer, against the Adams Brick Co. It was charged that after a shot firer had refused to perform certain work, Osborn was ordered to do the work and was injured by a cave-in. A jury in the lower court gave him a verdict for $2,500, but the trial court set aside the verdict. The appellate court holds all presumptions are in support of the verdict returned by the jury, and the case is sent back to the lower court.

The new tile and brick plant of the Riggs Clay Products Co. at Shelburn was formally opened recently and there was a large crowd in attendance. Addresses were delivered by J. C. Beyers, associate in soils and crop extension work at Purdue University, and Daniel Carpenter of Melott, a pioneer tile and drainage expert. The plant is one of the finest of its kind in western Indiana.

J. Halleck Zinn, local representative of the William E. Dee Clay Manufacturing Co., represented the Indianapolis Builders' Exchange, of which he is secretary, at the recent national convention of builders' exchanges at Detroit. Mr. Zinn succeeded in arranging to have the 1913 convention of the association brought to this city.

There has been a very marked increase in the construction of non-fireproof brick and fireproof buildings in the city, according to the records of Thomas A. Winterrowd, building inspector. Non-fireproof brick construction has doubled, as compared with last year. During the first ten months of this year non-fireproof brick construction aggregated $1,334,215 as compared with $641,250 during the corresponding period of last year. Fireproof construction, the first ten months of this year, amounted to $1,556,740. In the first ten months of last year, it amounted to $1,266,200. No other branches of building construction have shown such a large increase.

Halstead & Moore of this city, have been awarded the general contract for the construction of the new St. Francis Hospital at Beech Grove, which will cost about $200,000. The hospital will be a three-story structure of brick.

ST. LOUIS, MO.

St. Louis, Mo., November 12.—Business has been fairly good the past few weeks with nearly all the brick manufacturers. The weather has been all that the brick manufacturers could desire and it has resulted in their keeping their plants going steadily. Within the next few weeks or just before the holidays, the majority of the plants will close down, a short time, for the necessary repairs that will be required, and they will not resume operations again until after the first of the year.

A dozen or more new building projects are in the wind, including several skyscrapers for the business district and large business and apartment blocks for other sections of the city. As a matter of fact, the indications are that building will be widespread, extending to all quarters of the city, susceptible of improvement. The establishment of factories and the extension of railway terminals and facilities for industrial expansion for which land will be required, it is believed, will be prominent factors in the movement of the building projects. There is abundance of capital for all legitimate building operations at a comparatively low interest.

The building business in St. Louis for the month of October 1912 indicated a decline of $160,024 or about 10 per cent compared with October 1911. During the month 785 permits were issued for the new buildings, alterations and repairs amounting to $1,454,125. In October 1911 permits were issued for work amounting to $1,614,149. Of the permits issued for new structures 184 called for brick to the amount of $1,226,258 and 258 for frame and other structures to the amount of $69,075. Last month permits were issued for two mercantile buildings the cost of which is estimated at $169,000, one hotel to cost $220,000 and one school house to cost $155,000. The building operations for the first ten months of the year are still ahead of the business for the corresponding time of last year.

The new St. Edwards Church is being built on the northwest corner of Moffitt and Clara Avenues. The style is a modified English perpendicular Gothic of the best period. The basement story is of hammer-dressed courses of Carthage stone and the walls above this are of artistic matt-faced brick.

A three-story 100 room hotel to occupy an entire city block has been announced. The new project, which is expected to be in operation next May will be directly across from the McKinley station. The building will be or reinforced concrete with surfacing of brick and trimmings of terra cotta.

A bachelor apartment building planned to be the finest of its kind in St. Louis will be erected on Olive Street. The building will be a six-story structure covering all of the lot which is 170x180 feet and will have 200 rooms. Work on the site is expected to begin before the first of the year and the building is to be completed about the middle of next year. The building is to be highly ornamental in design. The front will be of white enameled terra cotta and the rear of red brick.

Work on what the Pennsylvania Railroad officials term the largest roundhouse in the world will commence in East St. Louis within the next two weeks. The building will be completed early next spring. A permit has been taken out for the erection of a foundry in North St. Louis to cover an area of 140x240 feet. The building will be one-story high, constructed of brick and steel.

The members of the Building Industries Association were entertained on Saturday evening at the rooms of the Architectural Club. A program of "stunts" was arranged by Frank C. Boyd, secretary and manager and lunch was served. The event was to bring the membership of the association into closer relationship as well as to consider the formation of the Employer's Building Trades Council. Secretary Boyd says the task of the builder is important to the community and he should have time to relax and get acquainted with his brethren. Architects and builders fix the conditions under which many if not all the people live and work, and their responsibility can only be measured by the opportunities.

At this gathering many suggestions were made on how to eliminate the incompetent, careless, bogus and shoddy builder, the purveyor of inferior materials.

Lectures have been provided for throughout the winter by the St. Louis Architectural Club for its members to be delivered at their club rooms.

Edward Farish, a member of the contracting firm of Farish & Gray which has erected several apartment houses in St. Louis has just returned from a five weeks' visit to Paris, France, where he studied the French apartment houses with a view to gleaning new ideas for such structures in St. Louis. His observations are that Paris is being rebuilt so far as the apartment house is concerned. He says modern apartments in Paris are called the American apartments and that architecturally, they outclass the very best we have. Paris buildings are mostly stone, very little brick being used, except for side walls and backing up.

PHILADELPHIA.

Philadelphia, Pa., Nov. 11.—This year has been a good one for the brick trade. The yards have all been busy and experienced no trouble in disposing of their output at fair prices. The building trade is in good shape and the year so far has been a very successful one.

The good roads movement, which is now one of the most talked of subjects, will eventually redound to the benefit of the brick plants. Where a good brick road has been laid, it has proved to be superior to any other form of pavement. This state will appropriate $50,000,000 for good roads and New York has already spent that sum and will appropriate the same amount again.

A decision in the courts, which is interesting to the brick trade, is as follows: D. J. Kennedy & Co. gave a contract to the C. P. Mayer Brick Co. for 5,000,000 brick for a certain year, the buyer agreeing to purchase them as fast as made. It was agreed that when the manufacturer had a stock on hand of more than 1,500,000 brick, for which the buyer had given no special order, he could sell the excess and deduct it from the 5,000,000 order. The manufacturer spent a lot of money making improvements to the plant to manufacture the brick called for, but as it turned out, the buyer gave special orders for only 2,500,000 brick. The court held, however, that the buyer's liability was not limited to the number of brick actually manufactured, but the manufacturer could recover profits on the balance of the contract, which would be 2,500,000 brick. The amount of damage is ascertained by deducting the cost of manufacturing this amount and delivering same, from the contract price.

The Yellow Rock Pottery has been putting some new lines on the market. The plant is being worked full time to fill orders.

The city of Philadelphia has awarded contracts, for improving its sewers, which will take 15,000,000 brick, which the Independent Brick Co. will furnish.

C. B. McCullough purchased the plant of the Karthaus Fire Brick Co., of Lock Haven, Pa., and is organizing a new company to operate same.

W. H. Sunshine, Johnstown, Pa., has purchased the property of the W. F. Kelly Brick Co., Somerset, Pa.

Simon Kline, an old brick manufacturer of Reading, Pa., passed away a short time ago.

S. B. Dobbs, of this city, who closed his brick plant at Mays Landing, N. J., for a time, has had it repaired and placed in operation this summer. It has a capacity of 50,000 brick and is in charge of J. H. Remmey.

The Sandy Ridge (Pa.) Fire Brick Co.'s plant burned some time ago, but has been rebuilt better than ever. It has been made fireproof throughout and is equipped with the most modern machinery. J. A. France, Phillipburg, Pa., had charge of the rebuilding. The plant is owned by the General Refractories Co.

The Great Eastern Clay Co., South River, N. J., has 600 hands making chimney brick. It is the only firm in the state manufacturing this kind of material.

John H. Brooks, Beaver Falls, Pa., has erected a new brick plant.

The Mack Brick Co., of this city, was the lowest bidder on a paving job at Wilkesbarre, Pa., but Judge Strauss held the contract up because he claimed the price was $5.00 per M. more than is charged elsewhere in the state and that the contract was on the "special material" plan.

The White Elephant Brick Co., headed by George C. Zeller and William Graham, has rented a new $40,000 brick plant at White Hill, N. J., at which a high-class red building brick will be made. The plant has been equipped with modern machinery.

The Darlington (Pa.) Brick & Mining Co. is now represented in this city by the O. W. Ketchum Co.

The Toronto Face Brick Co. was represented in this city by the Darlington Brick & Mining Co., but as the offices of that concern were moved to Pittsburgh, the Toronto Company is now represented by the United Brick & Clay Co.

The Excelsior Brick Co., Baltimore, is putting in a 150-h.p. boiler.

The Independent Brick Selling Co. has sold, in a short time, 18 carloads of shale roofing tile.

Thomas White and W. C. Meredith, of Punxsutawney, Pa., and A. O'Connell of Reynoldsville, composing the Meredith Brick Co., have been erecting a large brick plant at Reynoldsville.

The Independent Brick Selling Co. has put on a new salesman, H. Hollis, who was formerly the Philadelphia salesman of the American Brick Co. Joseph Egan, who was a brick broker here, has also been engaged by this company.

The Mack Brick Manufacturing Co. and the Hamburg Brick Co., have moved their offices from 2032 Land Title Building, to larger quarters in the Fidelity Building. Business is said to be very good with them.

CHICAGO.

Chicago, Ill., Nov. 12.—The near approach of winter does not seemingly affect the demand here for clay products; in fact, inquiries have been as numerous during the past few weeks as at any time this year. There has been a notable advance over the business of last year and a most gratifying showing has been made by the various clay industries here.

The publicity that has been given the clay industry in this section by the brick and clay operators has born abundant fruitage. The operators deserve much credit for their persistency in boosting the industry. While in some sections, the publicity idea is a new one, Chicago clay men are now reaping the harvest of publicity seed sown in former years, in the many thousands of tons of burned clay that are annually used in construction work here. This should be a valuable lesson to those who are just beginning to adopt publicity measures to increase the use of burned clay in their localities.

Work is being rushed on a large number of big buildings in the down-town section, and in the outlying districts there is no cessation of activity as yet.

There is great activity in the yards these days, and a considerable quantity of brick are being placed in storage sheds for the early spring demand. The yards, with favorable weather, will continue to operate for some weeks as yet, and by the closing down time, there should be a large stock of reserve brick on hand.

Conditions in the sewer pipe market are more favorable of late. Within the past month or so, since the advance in prices was made, purchasers feared the prices might go still higher, and as a consequence rushed their orders in before the possible greater rise should come. The prospects of this industry here are exceedingly favorable.

The crusade inaugurated by brick paving interests against the use of wood blocks in Chicago is to be continued. There is evidence that results from this labor will be well worth while, and that paving brick will be used here generously, as in other cities.

We have, from time to time, noted the advance made here in the architectural terra cotta industry, and its continued popularity is pronounced. In the new buildings under construction the use of terra cotta is noted at every turn, and as builders become more familiar with its usage still further architectural wonders will be evolved.

Work on the immense plant of the Whitacre Fireproofing Co., at Chicago Heights, Ill., will be begun in the near future. The main plant of the Whitacre company is at Waynesburg, Ohio, it being one of the largest plants in the country devoted to the manufacture of hollow building tile.

Reports at the office of the Chicago Sewer Pipe Co. are favorable for the coming month, the demand for the past month having been exceptionally good.

The offices of the Calumet Brick Co. have been moved from room 311 to room 523, Chamber of Commerce building. The new quarters are an improvement over the former. The company reports a good demand for its product.

W. P. Varney, of the Chicago Hydraulic Press Brick Co., says his company has enjoyed a prosperous season and that future prospects are good.

It will be several months before operations can be resumed at the new plant of the Clay Product Co., at Brazil, Ind., which will replace the one destroyed by fire some weeks ago. Reconstruction is being rushed under the personal direction of F. W. Darling.

The Jenkins & Reynolds Co. note with pleasure the continued demand for face brick. The outlook with them is favorable.

The Midland Terra Cotta Co. says that the demand for terra cotta holds up remarkably well, and future prospects are bright.

The Illinois Terra Cotta Lumber Co. has all the orders it can possibly fill this year and has booked a considerable number of orders for next year.

The Bonner & Marshall Co. is enjoying a very gratifying demand at this time for face brick and roofing tile.

Business is good with the Carey Brick Co. these days, and while there has been some little difficulty in making shipments at times on account of car shortage, otherwise there has been no real cause for complaint and the future looks good to the concern.

A New Company Under Old Name.

A new brick company has been organized, under an old name, in Chicago, viz., the Meacham & Wright Brick Co., with offices in the Chamber of Commerce Building, where the old company, known as the Meacham & Wright Co., operated its brick department. The new organization was recently incorporated with a capital stock of $50,000, and is a distinct organization from the older company. In fact only the name has been retained by the new concern. The officers are: President, F. D. Meacham; vice-president and treasurer, S. P. Blount; secretary, John D. Blount. The company will deal in face and other brick, and until next May will remain at its present location. In the spring it is likely that it will remove farther south and a display room will be added. Reports now are favorable and the outlook for business is good.

The Illinois Brick Co. has brought suit against the Chicago Heights Terminal Railway, the Chicago Heights Land Association, and M. H. Kilgallen, general superintendent of the former organizations, to force the defendants to bring into court all the books, contracts, papers, etc., showing the revenue of the railway. The brick company claims that it has been overcharged on cars of brick from Blue Island, to Chicago, a distance of fifteen miles. The excess is said to be from $1 to $7 per car, as compared with shipments of other concerns from Chicago Heights to Chicago, a distance of thirty-two miles. The company claims it has been discriminated against.

TEXAS.

Austin, Texas, Nov. 12—It is shown by the records of the eight largest cities of Texas that the month of October was a dull one in the matter of the value of the building permits issued. The total value of buildings for which permits were issued during that month for these eight cities, embracing Dallas, Houston, El Paso, San Antonio, Fort Worth, Galveston, Beaumont and Austin, was $1,109,721, which was a decrease of $1,251,479 from the value of the building permits issued in the same cities during the preceding month. It is expected, however, that the month of October will show a very large increase over the September records.

Everything points to wonderful activity in all lines of trade during the remaining months of the present year. Plans are being prepared for the erection of a number of office buildings of the so-called skyscraper type in Dallas, Houston, San Antonio and Waco, and nearly all of these proposed buildings will be of steel and brick construction. The movement for the erection of new and modern hotels has spread to many of the smaller towns of the state and there will be much building of this character done during the next several months.

F. M. Swearingen, of San Antonio, is at the head of a syndicate that is preparing to erect a 300-room tourist hotel in Corpus Christi, where two new and modern hotels were recently erected. Plans are well advanced for the erection of a hotel to cost about $1,000,000 in El Paso.

Among the larger office buildings that are to be erected is that of the Texas Company in Houston. This building will be twelve stories high and cost about $600,000. The Texas Company is a large oil producing, refining and distributing concern.

One of the most interesting exhibits at the Dallas State Fair held during the month of October this year, consisted of a variety of Texas clays and clay products. It was in charge of Dr. William B. Phillips, Director of the Bureau of Economic Geology and Technology of the University of Texas. In speaking of the exhibit Dr. Phillips said:

"The principal feature of the exhibit was a collection of Texas porcelains, made from Edwards county kaolin, each piece ornamented with a Texas wild flower drawn from nature, colored and burned in. I do not think that such a collection as this was ever before brought together. There were other interesting features, but I took pains this year to exclude everything not of real artistic merit and beauty."

The Fraser Myers Brick Co., of Dallas, has been awarded the contract for furnishing mottled face brick to be used in the construction of the new Youree 8-story hotel that is to be erected in Shreveport, La.

The large plant of the Butler-Elgin Brick Company at Austin, was recently partly destroyed by fire. While no authoritative statement has been made as to the loss it is said to be about $35,000. The plant will be restored to its original state and many improvements added.

THE PITTSBURG DISTRICT.

Pittsburg, Pa., Nov. 12.—According to well known contractors, improvements aggregating in cost a million dollars or more will be carried over into next spring so far as the western Pennsylvania and eastern Ohio territory is concerned. Considerable delay in the delivery of building materials throughout the summer and early fall has been experienced, on acount of the shortage of freight cars.

The report has reached local brick concerns that a Youngstown, O., company recently placed an order for a million builders at an advance over the market price, the buyer paying the extra price to insure immediate deliveries.

The C. W. Raymond Co., manufacturers of brick and clay working machinery at Dayton, O., have opened a handsome suite of offices in Suite 1314, Henry W. Oliver building, Pittsburg, where model machinery is on exhibition.

George J. Prindible, general manager of the Clearfield Sewer Pipe Co., has put a large force of men at work breaking ground for the foundations for the new plant, which is being erected at Clearfield, Pa. Besides making sewer pipe, brick and tile will also be produced. The capital stock of the company is $75,000.

Announcement has just been made that the Kerr Brick Co., which operates a brick plant at Salina, Pa., has purchased all the clay underlying the Franklin Reynolds farm, which adjoins the Kittanning cemetery. It is understood that the Kerr company will erect a model brick plant there at an early date.

A company is being formed among several well known building brick dealers in Pittsburg, for the purpose of buying and taking over an active brick plant in the Ohio River district. At the same time it is reported that the new company will make an official announcement concerning its plant within the next three weeks.

Every brick manufacturer whose property lies in the immediate vicinity of the Monongahela River in Western Pennsylvania, along the Ohio Valley and also the Mississippi Valley is vitally interested in the plan of a new $3,000,000 river transportation company which is being formed in Pittsburg, for the purpose of operating large freight boats between Pittsburg and New Orleans.

This scheme will be a boon to the brick manufacturers as it will enable them to make large shipments directly into the southern market, and at a much cheaper freight rate than is obtainable on the steam roads.

An official of this new Pittsburgh-Cincinnati-New Orleans Packet Co., when seen by a representative of "Brick and Clay Record," said:

"We are going after all the big tonnage we can secure. Within a few years the series of dams along the Ohio River will be finished which will enable shipments to be made regularly and speedily from the Pittsburg territory into the New Orleans market, or for that matter from the Pittsburg district to New Orleans, through the Panama Canal and to the Pacific coast. We are going to provide large freight lighters which will be placed at the disposal of the brick and sewer pipe people just as freight cars are placed by the railroads. There is no denying the fact that we can serve the brick manufacturers better in getting their shipments into the southern market than can the railroads."

The first boat to leave Pittsburg for New Orleans will leave the Pittsburg wharf the afternoon of December 2.

OHIO.

The new plant recently erected at East Liverpool, O., by Harry Horwell and his business associates, burned off its first kiln of white face brick a fortnight ago, and the product was pronounced by builders as being excellent in quality. This brick is made from native clay—the same kind that the original yellow pottery was made from in Ohio. The company is now securing agencies for this new product, and plans are also on foot for the erection of several more kilns of the beehive pattern.

General Manager J. W. Bucher, of the Globe Clay Works at New Comerstown, O., reports that their company is 6,000 tons behind with its orders. This year has been one of the most successful in the history of the company. The plant has been operated continuously, and new business has been coming in faster than shipments could be made. Plans for additions to the plant are now under way. A new kiln of 150 M. capacity will be built, and seven new dryer tunnels with a setting capacity of 60,000 brick are to be built and a new chimney of about 100-foot height will be erected. The management is doing all in its power to increase its production in order to properly take care of its increasing business.

The firing of the first kiln at the new Pittsburgh Tile Manufacturing Co.'s East Liverpool plant occurred late in October. This plant gives every indication of proving a valuable addition to the industries of the Pottery City. The company is headed by E. P. Lippincott, formerly a well-known brick manufacturer of Pittsburg. Mr. Lippincott in past years erected large plants at Freeport and Greensburg, Pa., and Conneaut, O., and has been connected with clay manufacturing industries of some kind all his life. The company is incorporated for $50,000. Its officers are: E. D. Lippincott, president, and Wallace K. Miller, treasurer. The continuous kiln plant is seen at this plant with all the improvements. The one central kiln is over 300 feet long, and the product advances from chamber to chamber until it emerges in a finished state. Roofing, promenade and other varieties of tile will constitute the product. Completion of the plant will give employment to 30 men and mark an expenditure of $32,000, according to a statement by Mr. Lippincott. Of this amount the Chamber of Commerce donated $840, or the price of the switch. This was the only request the company made. The new plant is located in the extreme Oakland district, East End, near the Ohio-Pennsylvania state line.

NEW ENGLAND.

The brick manufacturers at Berlin, Conn., are about to close their plants for the season. One of the large manufacturers stated that the present year had been a most successful and prosperous one and that while the demand was good, they would soon be obliged to shut down owing to the wet weather and heavy frost making the manufacture of brick difficult.

There is a good demand for brick in Boston but the price is said to be causing some hesitation in certain quarters, but those who are informed state that there is no possibility of a decline in prices for some time.

The O'Brien Brick Yard, in Brewer, Me., has been sold to the Brooks Brick Co., which will use it in conjunction with its other brick yard in Brewer.

The new post office building at Westfield, Mass., is being constructed of brick but the work has been somewhat delayed by the failure to receive brick promptly.

John W. Holmes, a well known brick manufacturer of New Britain, Conn., has returned from a trip to England.

The Norton Brick Co., York, Me., which is under the management of Ralph Goodrich, has had a very prosperous season, its output amounting to five and a quarter million brick. This company in common with other brick manufacturers, has had considerable trouble in securing sufficient help during the past season.

The new $150,000 Practice School building, to be erected at the Salem (Mass.) Normal School, will be faced with light buff brick to harmonize with the remainder of the Normal school buildings.

The Brooks Brick Co., Brewer, Me., lost no time in resuming business after a fire which recently visited its plant. The plant was closed down for only one day, during which time the arrangements were made for continuing the manufacturing.

THE TWIN CITIES.

Minneapolis, Minn., Nov. 11.—Now that the election is over, people will have a chance to get back to normal conditions, and the result is apt to prove beneficial to the building trades generally and, there is every reason to believe that clay wares, brick, hollow block, terra cotta and other materials will be used more in the future than has been the case in the past. The agitation against the waste by fire is gradually showing its effect. This state is publishing comparisons from month to month, of decreasing fire losses, and the news is received with great satisfaction. The fact that people generally are looking into the cause of fire losses directs their attention to the merits of burned clay materials when they have buildings to erect.

The immediate building prospect is not certain, as an early snow fall would have a tendency to discourage the beginning of buildings which might have to be carried over until spring. Architects, however, report considerable inquiry, although the projects may be allowed to go over until the first of the year.

As far as can be determined at this time, the result of the election is likely to have little effect upon the commercial and building situations. To a great extent the result was discounted, and people were expecting something of the kind, so that they are not inclined to take a distorted view of the situation.

The week of Oct. 28 to Nov. 2, inclusive, was devoted to a display of goods and wares made in Minneapolis. The displays were widespread, ranging from small to large. Building lines were well represented. One of the best displays was a joint display of local brick and tile concerns, which showed the value of burned clay construction in different forms. Six-inch walls, eight-inch walls and 12-inch walls were shown of different sizes of hollow block, the display being a section of a building with a portion plastered, to show the form of construction. Attached to each wall displayed, was a card calling attention to the fact that this form of construction was fireproof, and that the walls for a building 26x30 ft. would cost from $520 to $650, according to its thickness. With this display was a card bearing the names of the local brick concerns, participating in the display and also the local material houses handling their wares.

This was by far the most educational display of any shown. In addition to calling attention to the purely local interest—the home products—the display called attention to the really low price of fireproof construction, in which there is a steadily growing interest. The display cannot but have a good effect, and while the trade has not experienced any increase in inquiry as yet, other lines which made showings of seasonable articles have experienced immediate benefits, and it is fair to assume that the clay trade will reap real benefit from its showing.

Experimental Tile Cottages Erected.

Following the construction of a clay tile cottage in North Minneapolis, the E. G. Walton Co. is erecting a similar one in St. Paul. In the latter, some changes have been made to lessen the cost, and it is believed that it will be possible to erect a cottage of hollow tile with pyrobar walls at the same cost as one of frame construction. These experimental cottages are creating great interest among architects and builders, and if it can be demonstrated that these hollow tile cottages can be constructed as cheaply as frame ones of the same size, there is no room to doubt that hollow tile will have an increased demand. The Minneapolis cottage, mentioned, has steel floor girders and no weight rests upon the partition walls, which are of three-inch pyrobar. The Walton Co. has done a great deal of building for people who wanted homes, and could pay for them on the installment plan. With the company taking up the fireproof construction, and demonstrating along this line, there is no doubt that there will be a marked increase in the number of hollow tile dwellings. They are plastered on the exterior, upon the tile, without furring. It is felt that when such construction becomes better known it will not be long until there would be a demand for a brick face, using hard burned face brick for a veneering. This move by the Walton company holds great possibilities for the clay trade.

Once more the accident compensation question is under consideration in Minnesota. The Employers' Association has drafted a tentative code, which has been published for the purpose of informing employers of labor working in, with and around machinery, of what they will recommend to the legislature and asking for comment and criticism. The state labor department and the state bar associations are working on codes which they will recommend, and there is no doubt that the legislature will again have its hands full in deciphering which of the three or more codes presented for consideration is the most desirable, as well as which has the most support. The latter phase doubtless has quite as much bearing on the matter as the former. Brickmakers will do well to give the matter careful consideration, for there will certainly be a bill passed, the only question being what sort of a bill it is to be.

The Minneapolis Builders' Exchange held a Hallowe'en party Oct. 31, which was attended by members and their families. There were 146 present, and Hallowe'en games and dancing were indulged in.

S. L. Davison, of St. Paul, and a number of associates, have arranged to establish a complete clay tile and brick plant at Valley City, N. D., where they have just bought a tract of clay land. They have been testing the clay out with a view to making this move, and from the closing of the deal we assume that the test must have been satisfactory.

The plant of the Albert Lea Brick & Tile Co., Albert Lea, Minn., was closed down during October, and will remain closed until additional capital is secured to remodel the plant. Several Minneapolis men have been investigating the matter with a view of investing money in the project.

John H. Rich, president of the Red Wing Sewer Pipe Co., Red Wing, Minn., has submitted his resignation, to become effective Nov. 15. Mr. Rich has sought to lay down the duties of the office heretofore, but his resignation was not accepted. Mr. Rich retains his stock in the business and will have a lively interest in the continued success of the company. This company has two large plants at Red Wing and one at Hopkins, just west of Minneapolis.

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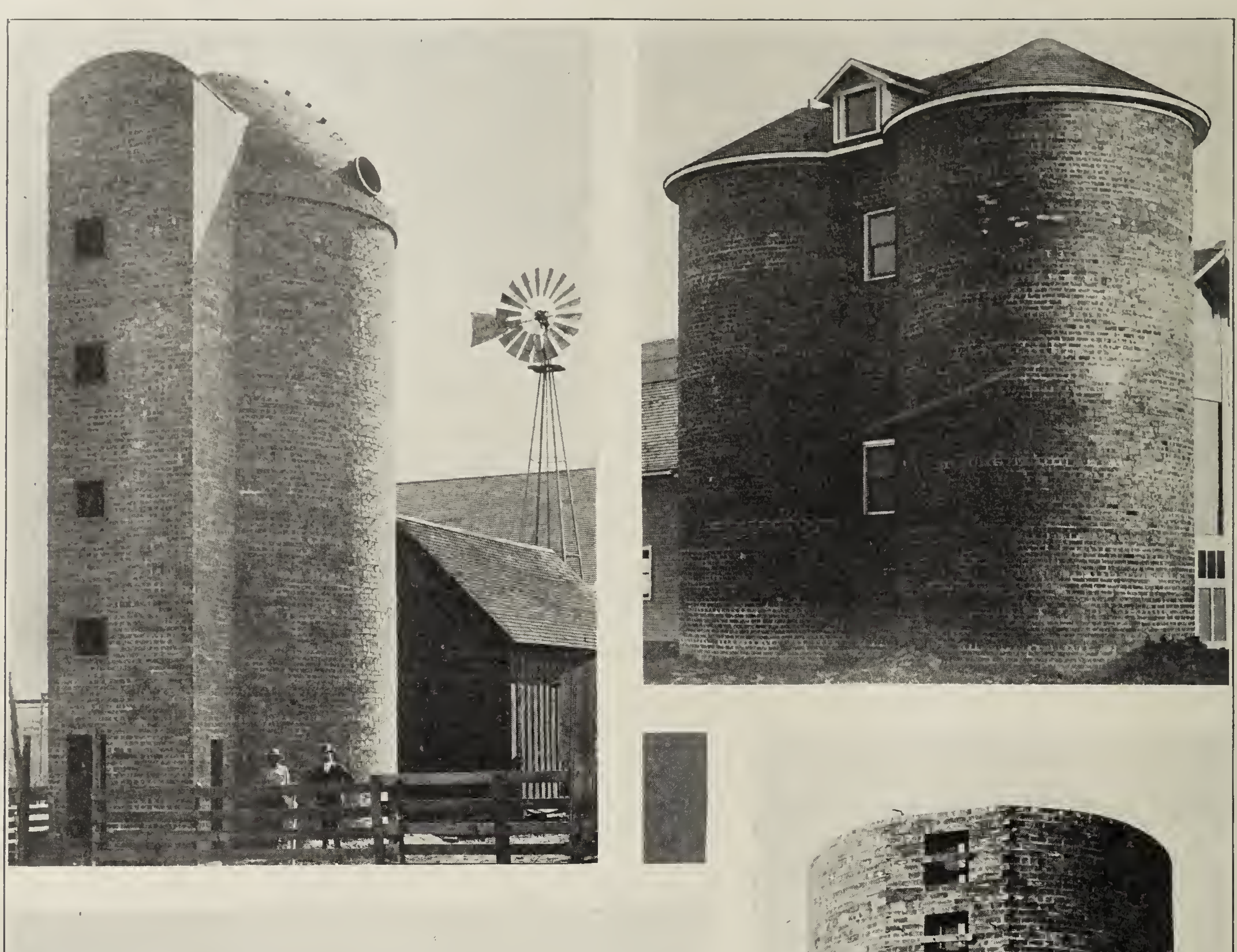
THESE FOUR SILOS WERE BUILT OF PAVING BLOCK



The upper left hand picture is the aristocrat of the silos. In addition to its covered roof and absolutely fire-proof construction it has an elevator, the shaft for which is plainly shown in the foreground. This silo was erected on a farm near Galesburg, Ill. The picture to the right, and at the top, is another "aristocrat," being a twin silo. It was erected by Emstrom Bros., near Galesburg, Ill. The lower left hand picture is another view showing the brick barn. The photo at the lower right hand corner shows one of the now common types of silo construction, with the open roof. All these silos were constructed of paving brick by the Purington Paving Brick Company, of Galesburg, Ill.

BRICK and CLAY RECORD
Vol. XLI- No. 11
Dec. 1, 1912

MAKES A CONTINUOUS KILN AT COST OF $3,000

Young Kansan May Revolutionize the Method of Burning Clay With Recent Invention—Simplicity and Efficiency Mark System, Which Includes Drying and Conveying

"Necessity is the mother of invention," so the adage runs, and in no specific case does the trite saying apply better than that of a young German who left the fatherland scarcely ten years ago and came to the new world across the seas to make his fortune.

In the following article Mr. Crosby describes a new conveying system, drier and kiln which are destined to cause a revolution in the handling and burning of clay products and which were made possible by this same law of human endeavor.

Mr. Crosby made a special trip to Northern Kansas to visit the young inventor and see his kiln and system in actual operation. The story of his visit is worth the while of any clay manufacturer to read.

By R. C. CROSBY

A CONVEYING system that combines simplicity and service, or a drying method that is inexpensive and at the same time practical, or a continuous tunnel kiln that is possible at one-tenth of the present cost of construction—either one of these three goals would be considered sufficient unto itself by the progressive manufacturer. But group all three into one compact system, under one roof and not only reduce the cost of construction and operation, but increase efficiency and improve the product and you have an achievement few clayworkers hope to realize.

Despite those who have declared it never would be,—the goal has been reached and like all milestones in the march of Progress "Necessity—the Mother of Invention," secures the credit.

This idealistic combination has gone beyond the experimental stage. It actually exists. For the past year a complete brick tile and hollow block plant has been using it. at Seneca, Kans., and, as the tidings spread, the little town has been the mecca for doubting, yet interested clayworkers.

The first public announcement of the new system appeared in "Brick and Clay Record," Sept. 15 and came from the inventor himself—K. W. Klose, a young German who has struggled in obscurity until now but whose name and fame bid fair to be known wherever clay is utilized in a manufactured product.

Mr. Klose, like most geniuses, is a modest, retiring sort of a fellow, uncommunicative and slow to acknowledge that he has accomplished more than his fellow laborers. But he carries three diplomas to attest to the claims of his friends and acquaintances that he is peculiarly well-equipped for the important mission he undertook. One of these is from a Government college in his native German province, another is from a technical school of engineering not far from Berlin and the other is from the school of experience, located in Germany, the home of the continuous kiln, and in the United States.

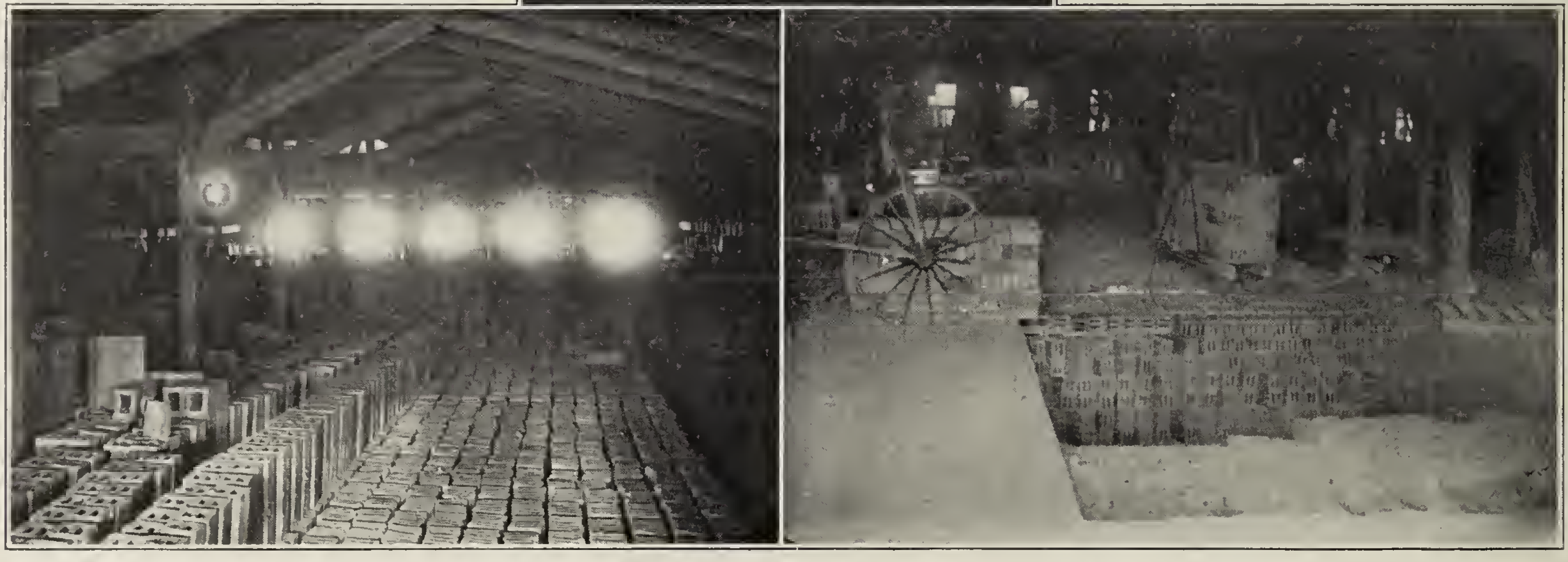
The announcement that appeared in this journal, last September, was in keeping with the nature of the man and so modest few realized its full value at first. But gradually it came upon many that somewhere out in Kansas, among the clay hills of the Missouri River Valley, there was the beginning of a revolution in the clay manufacturing industry and for weeks the one hotel at Seneca has been taxed by an increasing patronage and the narrow little road that winds around the foothills to the north of the city has been the most trodden of all in that vicinity.

One of these recent tourists was the writer and like his fellow travelers he left the train filled with doubt. Mr. Klose's claim was a broad one. Others have startled the world with exaggerated announcements. Others have made claims equally as broad and possibly more probable, but usually the result was the same—a bubble that exploded or an air castle that never materialized when the searchlight of investigation was turned on.

Not so with Klose and his announcement. Five minutes in his plant is more than sufficient to convince any practical clayworker, however, skeptical he may be, for simplicity is one of the strongest features of the Klose system, and even a novice may grasp the fullness of the idea with ease.

The first view of the Seneca Shale Brick Co.'s plant, where Mr. Klose operates his system, is disappointing to the visitor. Nestling among the foothills there is just an ordinary hollow block building of modest proportions. One, for some reason, expects to see something a "little different," but there it is, a modest structure that may house a bicycle repair shop instead of a new drying and burning system that has caused brickmakers to sit up and take notice. You enter the building and the first sweep of your eyes increases your disappointment.

For the full length of the building there is only a paved floor, piles of green brick or hollow block on either side alone breaking the monotony. A second glance discloses an "I" beam running the full width and length of the structure and bearing an electric triplex hoist—about the only visible sign of modern efficiency.



The portrait above is that of K. W. Klose, inventor of the Klose Continuous Tunnel Kiln. Just below, to the right, is a view of the kiln, with the electric hoist conveying a pallet of hollow tile and placing it in position for the setter. The opening shows the manner in which the green ware is set. In the foreground of the opening of the kiln the burned brick can be seen. The drawer removes the finished product at this point while the setter puts into place the green ware. One corner of the drying room, located just above the kiln, is shown in the picture to the left.

Another hurried sweep of the eyes and in one corner of the long room the visitor sees a combination brick and hollow tile machine of the American Clay Machinery Company's design busy turning out the product of the plant. Close to the cutter there is a double electric hoist which conveys the green brick or block to the floor above.

You turn to your guide—Klose himself, and he meets your look of disappointment with a smile.

"Where's the kiln?" you ask.

"You're standing on it now," he replies quietly and points to the floor beneath. For the first time you feel a warmth on the sole of your shoes and you make haste to leave the inch or so of loose clay that covers the brick pavement which crops up here and there.

You are inclined to believe the young German is having some fun at the expense of your credulity, but just then a fellow comes along with a small scoop, no larger than a housewife uses in her flour bin. He takes up a small cap which heretofore has not been observed and you see him disclose an opening scarcely five inches across. He sprinkles in barely a quart of small screened coal. The cap goes back into place and the fellow seeks a small stool to one side and proceeds to enjoy his pipe. You watch him in amazement.

"Is he the kiln-tender?" you manage to ask. Your guide nods assent. "And is that all the coal he puts in there?" Again there is a smiling nod in the affirmative. At regular intervals you observe the burner leave his seat, take up his tiny scoop and lifting the next cap proceed to replenish the fire in the burning chamber below.

And then Mr. Klose consents to tell you about his kiln and when he has explained its principle you look down at the "trench in the ground," as the visitor invariably calls it and exclaim:

"How simple! Why didn't I think about it."

And that one exclamation conveys better than pages of type the secret of Mr. Klose's invention. The kiln is not much more than a "hole in the ground," with four brick walls and its simplicity of construction and design is destined to create a stir in the clay world just as soon as the clayworker learns about it.

Think of it! A continuous tunnel kiln with a capacity of 600,000 brick per month that can be constructed for less than $3,000 or one-tenth of the cost of the ordinary tunnel-kiln and yet better and more efficient.

But simplicity does not end with the kiln. Mr. Klose has carried the same idea, coupled with economy and efficiency, into his conveying system and the drier, and your inspection of the entire plant is a revelation to you.

Briefly stated the Klose system takes into consideration these three main points:

FIRST—A conveying system that works almost automatically and which is a part of the general scheme of saving time, labor and improving the efficiency. This is so constructed and located that a small boy can operate it.

SECOND—A drying system which utilizes radiated

(Continued on page 431)

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USES PAVING BRICK FOR BUILDING SILOS

Galesburg Plant Opens Up New Field for Its Product—Other Brickmakers May Find Idea Good One to Follow

When Christopher Columbus discovered America he opened up a new field for over-crowded Europe. Every time a Columbus in the clayworking industry discovers a new field for its products he does for the clayworker what Columbus did for the European—gives him a golden opportunity to profit thereby.

The following article by Mr. Grayer describes a recently discovered field for the brick manufacturer—that of the silo. It is worth considering.

By JOHN GRAYAR

VITRIFIED PAVERS for silos! Why not? They are fireproof. They are durable. They are impervious to moisture. They are non-freezing. They are simple in construction. They are cheaper. They are everything a silo should be, and have none of the drawbacks of either the wood or the concrete silo. And then, when all the good points are summed up, add to them the attractiveness of a paver block silo as compared with wood or concrete.

Burned clay has proven its value in all manner of building, has shown its wearing qualities in paving block, has stood the test of time in sewage and drainage and has taken the lead in all places where it is adaptable. It remains, however, for the Purington Paving Brick Company, of Galesburg, Ill., to see the great opportunity in the silo field.

For two or three years now the Purington Company has been encouraging the use of their paving brick for silos among the farmers of Illinois and nearby states and probably are the pioneers in this particular work.

Common building brick have been used extensively in silo construction and there are many plants that have been making a hollow block of special construction, but it is doubtful if any paving brick concern thought of the paver until the Galesburg plant got into the field.

The cost of the paver, at first thought, is believed by the farmer to be prohibitive until he gets facts and figures. He has been taught that wood is the cheapest and that concrete is not far behind, and the promoters of these two materials leave him under the impression that it is out of the question to consider burned clay, despite its many advantages.

Publicity Campaign in Progress.

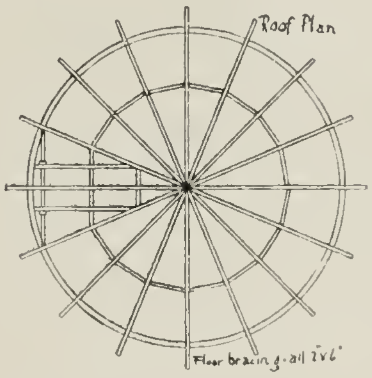
The Purington people, however, are doing much to explode this fallacy by the energetic publicity campaign Manager Orr is conducting. A little pamphlet which the Galesburg concern has issued, not only explains all the good points about vitrified brick as a silo building material, but also goes specifically into the construction cost.

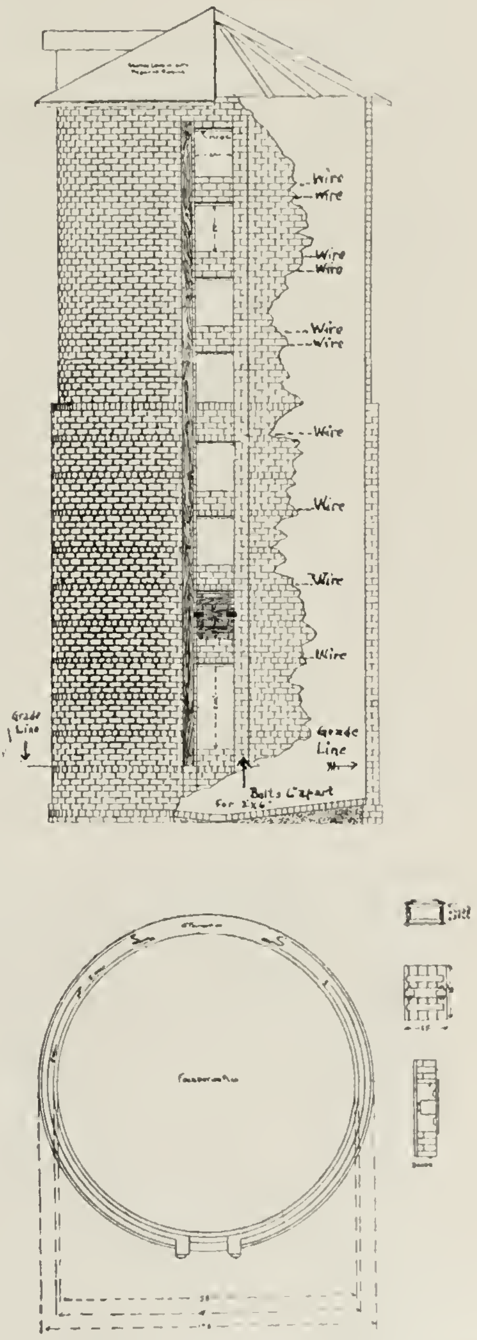
Of the hundreds of paver brick silos erected from the Purington block in the last two or three years not one has been constructed at a cost greater than other forms of silos and in most cases the cost is less. From figures furnished by farmers who have erected silos it is shown that a silo of average size can be constructed for $150 and that few of the largest sizes, where labor was high, cost more than $300.

F. H. Edwards of Orion, Ill., one of the most progressive farmers in that section of the state, was one of the first to use the Purington pavers in constructing a silo. He has a silo 32 feet in height, with a diameter of 16 feet. The wall is 8 inches thick for 21 feet and 4 inches for the balance of the way. Mr. Edwards says his paver brick silo cost him approximately $300, which is $50 to $75 cheaper than a wood silo of the same size.

W. C. Stevenson, of near the same city, erected a silo out of the paving material in 1911. His was some smaller, being but 28 feet in height and 12 feet in diameter with 4 inch walls. It cost him $160.

G. A. Pobanz, of Geneseo, Ill., has a 32 foot silo built of Purington block three or four years ago. It is 16 feet in diameter and has a 4-inch wall from the ground to the roof. Mr. Probanz says he kept an account of the exact cost of his silo and that the total outlay for labor and material was $241. This is at least $100 cheaper, he declares, than for any other form of construction.





Drawings Showing Working Plans of Paving Brick Silo.

The success of the Purington concern, may encourage other brick manufacturers to enter this field. It does not necessarily mean that paving block alone are to be considered. Any hard burned shale brick will answer the purpose admirably. The nature of the use of the silo necessitates a building material that will keep out moisture and frost. Any block or brick that has low absorption is excellent for the purpose.

The requirements for a properly constructed silo may be summed up as follows:

FROST RESISTANCE—The large quantity of

water in silage prohibits any form of construction that will not keep out frost, and this point must be taken particularly into consideration in northern states where the winters are severe. In wooden silos loss from frost is greater than in any other form of construction.

IMPERVIOUSNESS—An excess of moisture in the silage means loss. The walls of the silo should resist moisture and there is no other known material that does this so well as burned clay.

FIREPROOFNESS—This quality is necessary in all building construction and particularly so on the farm where fire protection is at the minimum. The fact that the silo invariably is located close to the barn makes it doubly necessary that the silo be fireproof. Burned clay, of course, is the only real fireproof material.

RIGIDITY—An ideal silo must have rigid walls. It must be strong enough to resist the great pressure of the silage which increases as the silage settles. The friction against the side of the walls and the weight of the walls produce a crushing action which is great near the bottom of the silo. Re-inforced brick construction means greater strength than wood or concrete.

DURABILITY—Silos, like all building construction, should be durable. The severe demands on the silo, however, mean that even greater durability is necessary than in other construction work on the farm. The silo walls must not only resist decay, disintegration and the action of frost, but also any implied or real action of the silage acidity. Burned clay, unlike wood or concrete, is unaffected by any of these conditions.

MAINTENANCE—Repairs and up-keep must be taken into consideration with the silo as well as with the barn or the farm house. A silo that must be adjusted for shrinkage and expansion is impractical. Wooden silos have short lives because of their tendency to disintegrate or decay. After the first few years they must be repaired and this necessity for replacing rotten portions increases as the years grow. Concrete cracks from the action of the frost, being unable to resist the expansion and contraction caused by the sudden changes in the northern climate. Burned clay is permanent. Once in a wall it never needs repairs, never requires painting and sudden changes in temperature have no effect on it.

COST—This is an item that always is to be considered. Comprehensive statements from farmers who have used the paving block for silo construction, as well as both wood and concrete, shows that the paver block is from $50 to $150 cheaper, the variation in cost being in the difference in cost of material and labor at different points.

The method of construction in silo building must be considered thoroughly to get the best results. This, of course, is true in any form of building construction, but owing to the inexperience in silo construction usually found in many localities, as compared with that of the ordinary residence or farm building, specific plans, based on the experience of others, are not amiss.

Specifications for Silo Construction.

The following specifications are those recommended by the Purington Paving Brick Company and are the result of a most exhaustive study of all methods:

EXCAVATION—The foundation should go well below the frost line. Under ordinary conditions this does not require excavation more than three feet below grade. The last few inches of soil should be removed with care in order that the natural compactness of the ground shall not be disturbed. It also is important that the ground on which the wall is to rest be absolutely level.

FOUNDATION—A 12-inch footing wall should be built 12 inches high around the entire circle. On the center of this 12-inch wall the 8-inch wall should be started with a header course and finished with a header course at the grade line.

WALLS—On the header course above specified the 8-inch wall proper should be started and carried up 20 feet with a header course every sixth course, and finished with a row-lock course. On this row-lock course the 4-inch wall should be started and continued to the desired height.

PILASTERS—In order to provide suitable fastenings for the doors and chute, 12-inch pilasters should be built, starting at the foundation and continuing to the top of the 8-inch wall. These pilasters should be placed the proper distance apart to get the desired width of door and should be tied in every other course to the main wall.

REINFORCEMENT AND SILL BRACING—On top of each header course in the 8-inch wall should be laid a number 7 wire, which should run in the center of the horizontal joints around the entire silo. In the 4-inch wall on top of the courses which form the first and third courses of the door sills a No. 7 wire should be laid in the center of the horizontal joints and run around the entire silo. The two ends of each wire should be securely fastened together at the side of the silo opposite the door. The door sills should be constructed of three courses of blocks.

DOORS—The arrangement and style of doors are largely a matter of preference, but the spacing of the doors and the construction as shown on the plan, have been used by a number of silo owners and found satisfactory, and they are recommended on account of their simplicity, it being unnecessary to use any castings or other special material to build them.

ROOF—The roof is also largely a matter of preference, but the style of roof shown on the plan can be easily and economically built, and it is therefore recommended.

FLOOR—After the walls are constructed the bottom of the silo should be sloped with thoroughly tamped dirt from the top of the 12-inch foundation to the center of the silo. It should then be paved with one course of blocks laid flat, running circular-wise of the silo, starting at the wall and finishing at the center. After the floor is laid it should be thoroughly grouted. The grout should be made of Portland cement, sand and water mixed in the proportion of two parts of sand to one of cement, with sufficient water to make it the consistency of thick cream.

MORTAR—The mortar used in building paver block silos should be composed of the best quality of Portland cement and clean, sharp sand, and should be mixed in the proportion of one part of cement to one part of sand, and sufficient water to mix to a plastic mass.

These specifications, while prepared by the Purington company for their paving block easily may be adapted to any form of brick or even hollow block.

Truly there is great field here for the brickmaker in every farming community and a proper local publicity campaign should increase demand for brick from a direction that heretofore has been considered but little, if at all.

DRAIN TILE INVESTIGATIONS IN IOWA

State Engineering Station Makes Special Experiments to Ascertain Effect of Drainage on Various Soils

Iowa is one of the largest producers of drain tile, and all the problems that confront the tile maker and layer have, at one time or another, been threshed out.

Just now the Iowa State Engineering Station is making special investigations into the effects of drainage on various sorts of soil, and the following report, which was recently published by the state, will prove of interest to tile men generally.

By A. O. ANDERSON

THE problems relating to drainage being one of the important matters in Iowa, not alone to the engineer, but to the agriculturist as well, it was deemed expedient that the Iowa Engineering Experiment Station should devote a generous portion of its time and funds in performing experimental work which would yield data of value to all persons interested in this subject. At present several lines of investigation are being exploited, the principal ones of which will be discussed.

A study of the effects of drainage upon the several kinds of soil found in Iowa, as well as the determination of the most economical depths and distances apart to which tile should be placed in these soils is being carried on jointly by the Station and the Soils Division of the Agricultural Experiment Station. To facilitate these investigations, experimental drainage systems have been installed near Rudd, Hanford, Lake City, Missouri Valley, and Moulton, Iowa, where the necessary data is being collected.

An investigation is under way which is intended to clear up the matter of the comparative values of the different kinds of drain tile used in Iowa. Several years must elapse before this question can be definitely answered, as the test of time alone can give satisfactory results. Different qualities and kinds of tile have been installed in some of the experimental drains, from which a number are removed each year for testing. Examinations and tests are made on pipe taken from any tile failure reported to the Station, and the cause of the failure is determined where possible. Besides this, engineers throughout the state are generous in furnishing data concerning failures which are not directly investigated.

When the investigation concerning the quality of drain tile was first undertaken, it became evident that some uniform method for testing the pipe must be adopted. As none of those methods in use were satisfactory, Professor A. Marston and his assistants designed one which is rapid and uniform in results, besides, imitating very accurately the actual conditions to which the pipe must conform when placed in the drain. The principle of the method is illustrated in Figure 1.

It will be noticed that the pipe is supported on a cushion of sand covering the lower quarter of its circumference, while the load is applied to a similar cushion placed on top of the pipe, the latter being retained in place by a bottomless box so arranged that all of the pressure is transmitted to the pipe through the sand bed. This method for testing pipe has been in successful use for several years, and has been adopted as the standard for Iowa by the engineering society and the two associations representing the drain tile and sewer pipe industries of the state. An advantage of the Ames standard method for testing is the facility with which it may be used, as no regular testing machine is necessary.

Need of Reliable Testing Machine Felt.

However, the need of a reliable testing machine which could be easily constructed at a moderate cost became evident, if the testing of drain tile and sewer pipe were to come into general use. To meet this demand, three types of machines were designed which could be built by any mechanic at costs ranging from thirty to one hundred and fifty dollars. These machines are adapted not alone to testing of pipe by the Ames standard method, but are applicable to any method used for bedding the pipe, as well as for the testing of posts, beams, or other

Modern Farm Drainage to be Successful Should be Planned by a Competent Engineer.

material within the capacity of the machines. Figures 2 and 3 illustrate the Ames senior machine, blue-prints of which will be sent to interested parties upon application to the Director of the Engineering Experiment Station.

The interest taken in this work is shown by the fact that not only do the people of Iowa submit tile for testing, but several car loads have been sent in from adjoining states. Many inquiries concerning the testing machines and methods have been received from various states of the Union, as well as from several foreign countries.

A method for the testing of sewer and drain pipe having been developed, it would seem that the difficulty of drafting standard specifications for this material had been overcome, since it would only be necessary to specify the quality of material to be used and the bearing strength of the finished article. But when information concerning the requisite strength of the pipe, or the load that it must sustain at various depths was sought, no reliable data was found. A number of formulae which might be used as the basis for calculation were at hand, but these required friction coefficients which no one had accurately determined. This being the case, it became evident that the Station had another task on hand, namely, the determination of the actual pressure to which the pipe and tile are subjected while in the ground, and to establish reliable co-efficients and formulae for the calculation of these pressures.

Method of Conducting Test.

Several methods for conducting this investigation were proposed; the one adopted is shown in Figure 4. This consists in placing a number of tile in a trench of the desired depth and contour, and supporting them by means of a beam suspended from a weighing apparatus. The character and capacity of this apparatus may be judged by the fact that pressure readings approaching fifty thousand pounds have been taken. The method of conducting a test is as follows:

After the trench has been excavated to the desired depth and contour, zero readings of depth and pressure are taken, and the filling begun. All the filling material is weighed as it is deposited, and friction tests made to determine the internal friction of the material as well as its sliding friction against the bank of the trench. These friction values are used in checking the several formulae for earth pressures under investigation. At stated intervals, the depth of fill is measured and a scale reading taken which gives the actual pressure on the pipe for that depth of fill. After allowing a few days or weeks to elapse, during which the changes in pressure and settlement of fill are noted, the whole apparatus is dug out and another test begun.

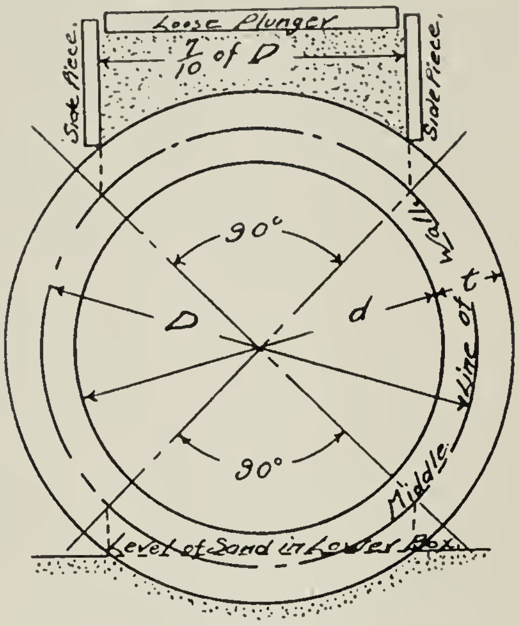


Fig. 1. Showing Principle of the Tester.

The scope of the work done may be illustrated by the fact that tests of pressures on pipe from twelve to thirty-

(Continued on Page 441.)

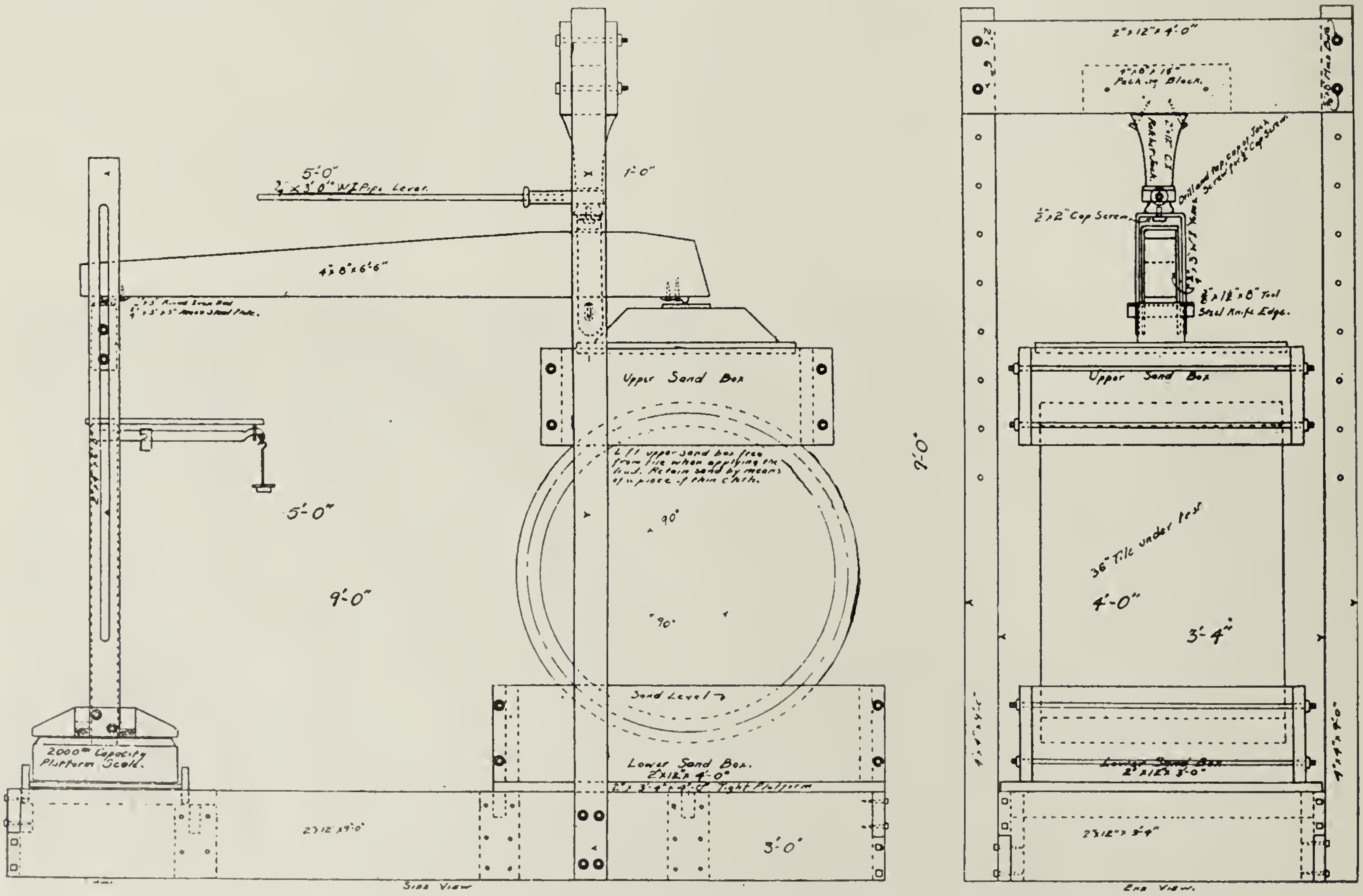


Fig. 2. Drawing, Showing General Working Plan of the Ames Testing Machine.

TECHNICAL MAN IN THE CLAY INDUSTRY[*]

College Training, Supplemented by a Year's Practical Experience at the Plant, Produces Superintendent of Utmost Value to the Clay Manufacturer

By DWIGHT T. FARNHAM

THIS is a subject which has been of great interest to the writer for some years, during which time he has been instrumental in developing for his company—and in one or two instances, entirely inadvertently for competitors—burners, foremen, assistant superintendents and superintendents from the material at hand. Sometimes he has sympathized with the cynic who decided after mature deliberation that the more he studied men the better he liked dogs. For the most part, however, the enthralling interest of the subject more than pays for the trouble, and when a man shows intelligence, develops enthusiasm and finally forgets all about quitting time and the size of his pay check, in his eagerness to learn the whole business—and that right off—you forget that you ever have been up against laziness, stupidity anad indifference.

Every company of any size is constantly in need of new men. All sorts of plans have been adopted to secure this new blood. The two extremes are represented perhaps by a large blower company, which has a standing order placed at several universities for college graduates, and a gigantic foundry, whose president until recently put in his spare time writing bloodthirsty serials on the utter uselessness of anything born in the same state with a university.

That is the trouble with most discussions of the value of technical men; to one class they are the hero of the play—the handsome, upright youth bearing the torch of knowledge into the benighted realms where ignorant and hide-bound brickmakers dwell in utter darkness. To the other class, the graduate of a technical school is the unlicked cub, who is listened to with mock respect and is dubbed a "dishwasher" or a "college feller" by the honest brickmaker, who, having made his pile by his own methods, does not propose to be contradicted by any fledgling who never got a dollar except by writing home to father.

Apprenticeship Course Established.

The middle course—mutual respect and patience, with an honest desire on the part of each to help the other, and a careful avoidance of the "know it all" attitude on the part of the technical graduate, as well as on the part of the practical brickmaker—is the course productive of real results. I think even the most radical on both sides realize this, for I notice some of the technical men, who have been having their troubles, in earnest conversation with some of the men who have been through the mill, while the most loudly self-styled "practical man" generally drops around to the ceramic meetings to "see what the professors have to say."

The Denny-Renton Clay & Coal Co., of Seattle, Wash., about two years ago felt the need of a regular source of supply to draw upon when positions of responsibility were to be filled. After carefully considering the matter, it was decided to establish an apprenticeship course open to graduates of technical schools. In May, 1910, circulars were sent out, from which the following is an excerpt:

"The object of this course is to give men who are already familiar with the theory of clayworking a thorough knowledge of the practical end of the work in order to have material to draw from when positions of responsibility are to be filled. The compensation for continuous service for the first year has been fixed at $75 per month.

"The factories of the company are located at Van Asselt, Renton and Taylor, Wash.

"At Van Asselt are located the sewer pipe and architectural terra cotta plants and the laboratories.

"The Renton plant manufactures paving brick and pressed brick. This plant has a capacity of 180,000 paving brick a day.

"The Taylor plant is a large combination plant consisting of a recently constructed and thoroughly up-to-date sewer pipe factory, together with a brick plant having a capacity of about 35,000 stiff mud and 40,000 dry press brick per day. This plant is operating on dry press face brick, fire brick, electrical conduits, drain tile, fire proofing and sewer pipe.

"All work is in charge of men who are capable of giving technical information on the lines in which applicants shall work.

A Year's Course Outlined.

"A year's course, divided somewhat as follows, has been tentatively made out:

"Two months' firing at Renton. This is designed to thoroughly familiarize the men with the coals of this section, the proper management of fires and firing practice in general.

"One month's work at the sewer pipe press, either at Taylor or Van Asselt, combining with this work a certain amount of work around the drying floors, which will enable apprentices to become thoroughly familiar with the details of drying hollow ware, treatment of the ware to prevent cracking, the details of finishing, turning, and the management of the steam drying system. As there is considerable to be learned in this department, the length of time spent in this work may be increased if it is found desirable.

"One month working on stiff mud brick machine, either at Taylor or Renton. This work will familiarize the apprentice with die management, cutting table adjustment and the operation of the pug mill machine and represses in general. It may be found advisable to supplement this course with from two weeks to a month spent about the waste heat dryers at one of the plants.

"One month as machinist helper in one of the three plants, to familiarize the men with the repair and care of the various pieces of machinery about the plants. It may be found desirable to spend a month at each plant in this work.

"One month as millwright assistant in one of the three plants. This is designed particularly to familiarize the apprentice with different sorts of lumber, methods of building construction and the general work of millwrighting, which is so necessary in the construction of plants.

"One month on the setting gang in one of the three plants.

"One month to be spent with the head sorter of the various plants to familiarize the student with the quality of ware that is suitable for the various markets. Also, this work will allow the student to analyze the effect of the different processes of his work on the finished ware.

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[*] Paper read before the Annual Convention of the National Brick Manufacturers' Association, Chicago, Ill., March, 1912.

"The balance of the year should be spent on the burning at the various plants. The plants are all equipped with the latest technical apparatus and the burning is done in a thoroughly systematic manner, in all cases under the supervision of technical men. Two or three months, at least, could be spent at each of the plants very advantageously.

"On all this work the apprentice would be expected to work the same hours, with at least the same diligence as the men regularly employed in the various operations.

"Those particularly interested in a special branch of the work will be permitted, where possible, to specialize in that work."

These circulars were sent to a number of universities, among which may be mentioned the Ohio State University, University of Illinois, Cornell, Michigan, Wisconsin, Armour Institute, M. I. T., and the University of Washington. From these universities there were a number of applications, twelve of which were considered seriously. After some correspondence with the men themselves and the instructors under whom they had been working, six men were selected. These men went to work during the summer of 1910 at Taylor and Renton. One remained about six months, two more for approximately eight months, two more stayed their year out, and one man is still with us in a position of responsibility.

Although it might be interesting to discuss the reasons why our harvest was only 16 per cent, such a discussion is obviously impossible at this time.

The following spring we began recruiting again, making, however, a change in our system. Instead of sending east, we began picking up men from among our own employes, and from among the technical men who sought employment from time to time. We have at the present three men so gained who are in various stages of apprenticeship. Two more men have been given regular employment in positions of responsibility, having been graduated from the regular course rather suddenly to fill executive positions.

First Plan Modified.

We have found in our modification of the first plan several advantages. When we recruit our apprentices from among men who apply for work in person we are better able to judge the men. In sending east to the technical schools we have to depend, in many cases, upon the judgment of instructors unknown to us, who, not knowing our requirements, are obviously at a disadvantage in making their selection. Furthermore, if a college man applies for work at our office, is employed for a time and proves suited to our requirements, we are under no obligation to do anything more than give him a fair trial. If we have induced him to travel several thousand miles, there is a certain moral obligation to keep him the full year at least.

We are in a still better position to judge our man when he is recruited from among our own employes. Such men are usually encouraged to attend night school and to do supplementary reading for a few months before they are admitted to the apprenticeship course.

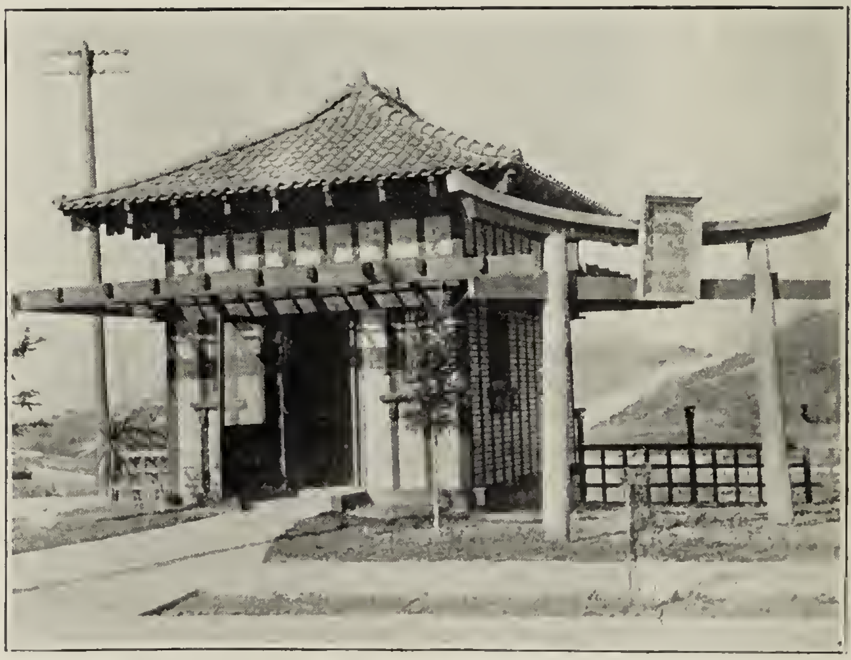
So much for what we have done. Before discussing the technical man, as such, lest our position be misunderstood and some one else conclude that the company is not in sympathy with college men, we would state that 61 per cent of our active executives, from assistant superintendents up, are college men.

The faults of youth and inexperience are so bound up with the faults of the recent graduate from the technical school that it is difficult to avoid confusion in discussing them. Many men lose sight of this fact in discussing the value of the college man. They also forget the axiom that "College does not make wise men—it simply develops them," and conversely, "College does not make fools—it simply develops *them*." The result is that the faults of youth and the faults of the other thing are very often foisted upon the college training, which is entirely innocent.

To the writer's mind, the greatest handicap the young engineer has to labor under is his lack of commercial training. This is a fault that is not attributable to youth or inexperience, chronic or otherwise. I do not mean that he has not studied bookkeeping and banking; I mean that he loses sight of the reason for existence of the industry in which he is engaged, in his interest in the technical problems. If you will stop and analyze this you will see what I mean. Who usually starts a clay plant? Some man with money. Why does he start a clay plant? To make more money. How will he make the most money? By producing goods for the least money. Who will he honor the most? The man who helps him secure the lowest cost of production. There is the whole answer to the question of why more technical men do not succeed in the clay business. At present there are comparatively few places in the clay industry in this country for purely technical men. There are a few in the terra cotta business; more in the white ware industry, and three or four in the manufacture of art pottery. The fellows who don't get these jobs have to make a place for themselves as head burners, assistant superintendents, superintendents, etc., if they wish to live on the scale (and most of them do) to which they have been accustomed at college. The securing and holding of any of these jobs rests about one-third on their technical ability and two-thirds on their commercial ability, which is a mixture of executive ability and the financial instinct.

(Continued on page 429.)

The accompanying illustration shows an oddly designed real estate office, located on Mount Washington at Los Angeles, California. It is constructed principally of brick with a roof of red tile and for a building so small, the structural lines are especially good, and the combination of burned clay materials produces a very striking effect.



Unique California Real Estate Office Made of Clay Products.

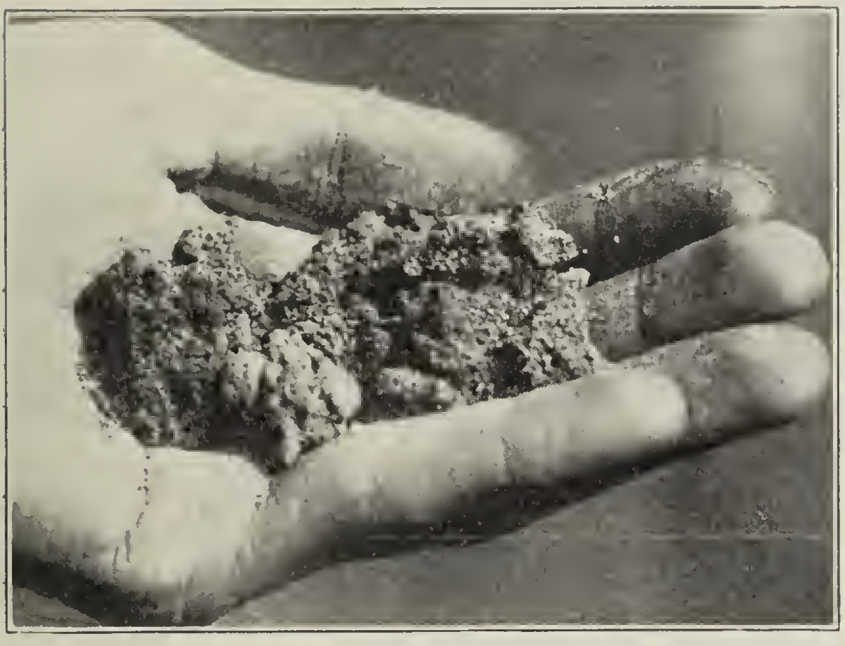
DEATH LURKS IN CONCRETE FAILURE

Glaring Defects in Re-inforced Concrete Structure in Detroit Responsible for Death of Three Workmen—Rigid Investigation Being Made

(By a Staff Correspondent)

Detroit, Mich., Nov. 29.—Defects so apparent and glaring that city authorities were amazed at the audacity of the builders in the construction of a re-enforced concrete structure at Larned street, near Antoine, in Detroit, were responsible for the death of three men and the injuring of half a dozen others. Poor cement which crumpled into a damp dust with the pressure of the hand, poor locking of the pillars and other defects were responsible for the accident and the result is that the authorities will hereafter enforce more stringent rules in the construction of concrete buildings in this city.

Under favorable weather conditions, the beams of a reinforced concrete building require three weeks to set. Employes at this structure declare that only two weeks were allowed and that unfavorable weather conditions were apparent most of the time. The wooden molds were removed, it is said, before the cement had "set properly," and this saved the expense of new molds. The pictures show the interior of the building after its collapse, as well as the rotten cement and how easily it could be crumpled in the hand.

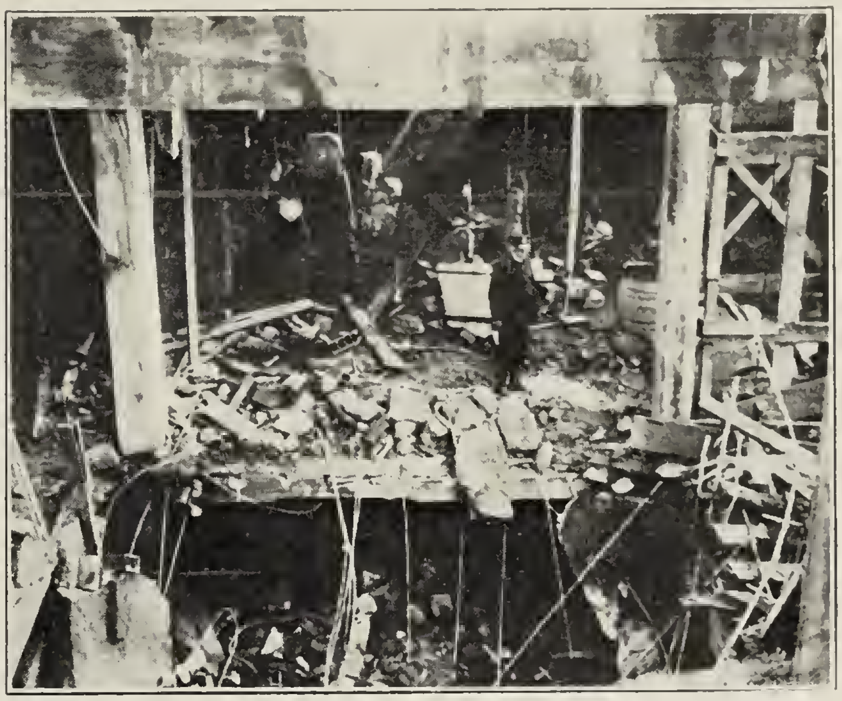


Showing How Easily the Concrete is Crumbled in the Hand.

More Concrete Fatalities.

Owing to the collapse of a concrete roof connecting two stores on Main St., Richmond, Va., October 16th, one man was instantly killed and other workmen injured. The usual excuses were offered, chief among which was the stock one—removal of the forms before the concrete had properly set. It seems, in view of the increasing number of fatal accidents from concrete failure, cities should make their building regulations more stringent, and hold contractors to strict account in order to lessen this continual menace in building operations.

At Bridgeton, N. J., the walls of the new filtration plant have already begun to crack and leak, although only during the past month has water been turned into the concrete basin. It is said the work will have to be done over again.



Showing the Interior of Detroit Concrete Building After its Collapse.

ERA OF PROSPERITY ANTICIPATED IN CLAY WORLD

BRICK and clay manufacturers throughout the United States, hold the opinion that during the twelve months of 1913 big business will be the rule. Personal statements from a number of large brick manufacturers show their firm belief that conditions of trade in general will be much improved.

Machinery manufacturers who have a large trade among the clay industries also report an unusual season of activity in their special lines, and many inquiries both for the present, and for the coming year. These optimistic views concerning business conditions are also advanced by builders.

The following expressions from manufacturers indicate which way the trade winds are blowing since the recent National election:

C. E. Foster, president and general manager, Kittanning Clay Products Co., Bradford, Pa.:

"Our experience in business matters during the past 60 days has been very satisfactory as far as volume of business is concerned. We have found it necessary to turn down several valuable orders, owing to our inability to supply goods as promptly as required. The outlook in the building line from our viewpoint is very encouraging, indeed. We have experienced at the present time some difficulty in securing an adequate supply of labor, and also in securing cars to handle our shipments. But all of the business conditions at the present time and the outlook for the future are very encouraging."

Ships Train Load of Goods a Day.

John W. Sibley, president Sibley-Menge Brick & Coal Co., Birmingham, Ala.:

"Notwithstanding the Presidential campaign, business conditions in our line are better than they have been for four years. Our plant is being operated to full capacity, and we are shipping a trainload of goods per day. We are a little short of labor, owing to the vast amount of railroad construction in our neighborhood, where the Louisville & Nashville Railroad is double-tracking its main line. The movement of the crops is creating a shortage of railroad equipment, and we are fearful that we will suffer from this during the next 60 days. The outlook for the future in a business way in all lines throughout the South is most propitious. The 'Development of the South means the enrichment of the nation,' and we look for a striking fulfillment of the prophecy during the next few years."

General Feeling of Confidence.

E. S. Johnson, president Davenport Locomotive Works, Davenport, Iowa:—"Were it not for what we read in the newspapers we would have no evidence whatsoever of a national political administration. While we supply some large locomotives, the bulk of our business is in the smaller locomotives for use by railroad contractors and for switching purposes in industrial plants. This being true, our business is not only an excellent barometer of general conditions now existing, but is a pretty sure indication of future business activities.

"We have been running full capacity since the first of March this year, and at the present time are running night shifts in one department in order to enable us to make promised deliveries. Our agents throughout the country, and especially in the West and Northwest, send us very encouraging reports of the business we may expect in the early spring of 1913.

"We believe the general feeling of confidence in business circles is well founded, and anticipate an era of unprecedented prosperity."

The Taplin-Rice-Clerkin Co., manufacturers, Akron, O.:

"We are so awfully busy attending to our business that we are unable to write you such a letter as would do justice to the inquiry you have asked for.

"Last year we had a stock on our hands, but this year it seems that our business is greater than ever; in fact, it is not now with us so much a question of selling the product, as it is to be able to get it out, and we can see no cloud in the sky of financial prosperity for the future.

"Referring to the supply of labor, we have no trouble to get an ample supply in the various departments, regardless of the fact that we are in the biggest and best city on earth.

"Referring to the matter of shortage of railroad cars, we are having some trouble in that line, but if the users of these cars, that is, the shippers, would unload promptly, instead of availing themselves of the 48-hour limit, there would be no trouble of shortage; we are quite certain of this. We always unload our cars within a few hours after receiving them, and this enables the railroad company to do a larger business with the same number of cars."

In addition to these expressions, the announcement has just been made that the Republic Iron & Steel Co., will begin at once on the construction of 68 bi-product coke ovens near Youngstown, O., and that the order for the brick for this improvement has been placed. The improvements planned for immediate construction by this well known company will cost between $750,000 and $1,000,000.

FROG RAISING—SIDE-LINE FOR THE BRICKMAKER

THERE are few brick-yards in the country but what have their pond, and the fact that the pond can be made a paying investment over and above its actual value in supplying the water for moistening the clay and supplying the boilers, is a fact that most brickmakers have overlooked.

We met a clay manufacturer on a train bound for New Orleans and he told of his own successful venture in this line, as follows:

"The very fact of there being a brick-yard, is pretty certain that there is a town, close by, for brick are hardly apt to be used where there aren't people. And where there's a town, rest assured, there are people who like good things to eat. So having but recently returned from St. Paul, which is one of the largest frog-markets on earth, and having seen how much people enjoyed eating frogs' legs, it occurred to me that that pond of mine might be used for frog-raising, in addition to its original use. I secured a few bull-frogs from the nearest game store and proceeded to let them breed. Then I let the progency grow to adult age and in turn, let them breed. Only, I took the precaution to surround my frog pond with a fine netting-fence, small enough in mesh to prevent the frogs from decamping, for they have a bad habit of all marching off at one time. Then, as the frogs increased, I began marketing some of them. I arranged with the local butcher to suggest to his patrons that he could get fresh frog-legs any time they desired. The novelty caught the fancy and tempted the palates of his customers and they ordered. They enjoyed the tidbit, which tastes much like chicken, and being a comparative novelty they mentioned it to their friends, telling these where they'd secured them. Then they ordered, in turn, and when their grocer couldn't supply them and they told him their friends had a grocer who could, he got busy and soon discovered the whence of the frogs. So competition arose and I soon was able to raise my prices.

"Then another side-line developed. I charged so much per frog, taken out. I also sold the right to sportsmen, boy-hunters, that is, to shoot frogs at a quarter apiece. Boys who wanted to show how good their aim was, came in companies, and held shooting matches. They paid for the privilege and then paid for the frogs, so you see it paid me well.

With frogs selling today at 35c the leg, or three for a dollar, in the big cities, and dealers unable to supply the demand at that, the value of the frog-industry as an adjunct to the brickyard, is well worth investigating.

Frog Raising As a Side Line for the Brickmaker.

PUTTING EFFICIENCY INTO SELLING END

How Billie Deadun Took Hold of a Losing Brick Business and Handled the Antiquated Salesman Problem in an Original Way

The third and last installment of the interesting and timely series of salesmanship articles by Mr. Beals, in which it is unmistakably proven that modern methods of publicity and efficiency, properly applied produce healthy dividends.

Billie joins the Deaduns' forces—E. N. Terprise gets a "run for his money" The old firms unite and a Great Building Service Corporation results.

By ALLEN E. BEALS

WILLIE DEADUN buzzed into Still Haven, in a six cylinder limousine, late Thanksgiving morning, with a vacancy in his stomach and a telegram in his pocket. Billie's arrival was heralded by a full-sized college yell and as the family rushed out through doors and casements, the stocky, perfectly tailored, but much overcoated occupant of the limousine bounded onto the lawn and hurled himself with a "Hello, Folks," into as talkative a band of admiring relatives as any city chap could hope to brag of.

After dinner, the senior Deadun gathered a son under each arm and took them into the conservatory for a quiet smoke and chat about the business. He was going abroad, he said, but before he went he wanted to turn the business over to his boys. He told them it would not be an easy road to travel; the business was going backward for some reason; he was losing his old customers; he was not young any more and he did not feel that it was up to him to re-build the business, because in a very short time it would belong to them anyway. New business standards had come into play and he was afraid that the policies that he had followed for the last forty years were not the ones which would bring success today. Charlie had carried out these policies faithfully, but the competition working on modern lines, had seriously undermined the house. He wanted Billie to take hold of it. He would advance the necessary cash on a mortgage and half interest basis, the two boys to take the other half.

Billie smoked up four cigars and two-thirds of a pack of cigarettes during the interview. Charlie was strangely silent and whenever Billie glanced at him, he seemed to be watching the snowflakes falling against the window pane.

Billie said he was pretty well fixed where he was with the excavating company in "Phily," and he didn't want to give up a good thing for an uncertainty. He did not like the idea of going into another line. Likewise he did not relish the idea of playing the necessary role of the bull in the china shop and mussing things up in an office which had once known him as "that mischievous kid of the Boss's," when the present staff of salesmen were young men.

That week E. N. Terprize clipped another good contract right out from under the fingers of Deadun & Co. It was for the new high school building. Deadun & Co. could have had it had they they not been sold up for the period when deliveries on the high school job would have to be made. E. N. Terprise also was sold up, but while Charlie Deadun sat by, on that plea, the hustling E. N. took an option on another plant and was thus able to make the deliveries, although not on a very large margin of profit. Deadun & Co. would have figured a dead loss if they had taken it. E. N. Terprise figured his loss as "advertising" and kept his organization alive.

Boyhood Rivalry Renewed.

Back in the old days E. N. Terprise and Billie Deadun had had a fistic argument in which both lads got pretty thoroughly pummelled and ended in what might be called a draw. Hence the enmity was never fully wiped out. Such trivial things sometimes have weight in casting the die for more important things. At any rate Billie decided to hold his stocks in the excavating concern and to put his energy into the selling end of the old firm. Secretly, he wanted to "put it over" E. N. Terprise again.

The first thing the inhabitants of Still Haven knew of any change in the old building material supply house of Deadun & Co. was when the forty-year-old sign bearing the words "Deadun & Co." was succeeded by a sign which read "Deco Brick & Supply Co." The next thing that happened as far as the populace knew was an announcement in the town papers that the name of the company had been changed, that Ezra Deadun, the founder of the business, "and public-spirited citizen" had retired from active business and had turned it over to his sons. Announcement was also made that the company would build a business building on Main street and would move its distributing yard to a more desirable spot nearer the new section of the town.

That was the outward visible sign of the inward serious fact that Billie had taken off his coat in the office. But while the town was rejoicing in the fact that the old vacant lot on Main street was at last to be improved with a new office building for the "Deco Brick & Supply Co.," a veritable hornet's nest was being stirred up down at Deadun's wharf.

Billie had cause to realize only a few days after he had taken active hold of the business that his brother had assumed the role of a millstone nailed fast to Standpatism. The office help had been quick to notice it. Even the salesmen, schooled and trained in the old Deadun policy, were inclined to side with Charlie. "New fangled ideas" may be all right in Philadelphia, they murmured, but they never would work out in a city like Still Haven nor in a county like Kilden.

Hard Task to Install New Methods.

Billie did not know very much about brick selling, but he did know a lot about efficiency in salesmanship in general. Charlie, on the other hand, knew all about brick selling, but nothing about efficiency. Billie was put down, therefore, as a theorist, while Charlie was generally considered by his fellow townsmen as a staid, conservative, safe and sane business man who could get a tighter grip on a dollar and hold onto it longer than any other man for forty miles around. Billie was considered a spender, but even his critics gave him credit for getting back in business every cent he spent in pleasure or in entertaining business associates. Charlie had depended solely upon the former merit of his product and the prestige his business firm had established for success, and was beaten by his competitor. Billie depended upon merit, but he also figured that merit counted for practically nothing unless others beside the buyer and seller knew of the existing quality, and started out to beat his competitor. Billie figured that instead of a few persons knowing about the merit of any article or piece of workmanship, thousands should know about it. Charlie believed that not one person in any one of those thousands ever would be a possible buyer of brick. Billie figured that that one person out of every thousand might need a small quantity of brick for foundation or a larger quantity some day, and if that thousand persons could be multiplied into an army, the one possible buyer in each one of those thousands would have the purchasing power over sufficient business to keep an up-to-the-minute brick and supply house in a highly prosperous condition. So he advertised.

Billie had pretty definite ideas about the sales-force putting in full time, while Charlie thought best results would be obtained by giving each of the salesmen carte blanche in the selling end. Billie did not have much faith in the idea that each salesman could keep track of the future requirements of his customers in his head, while Charlie thought card systems, selling conference, advertising and good follow-up systems were extremes of red tapeism and had never adopted the plan.

New and Old Systems Clash.

Billie believed that looseleaf bookkeeping was more efficient than the old style method, while his brother thought it a useless expenditure to spend perfectly good money in changing to a system that he believed could not in any way redound to the ultimate benefit of the company's bank account.

But the height of Charlie's holy horror came when, in laying out the plans for the new office building, provision was made for a photographic dark room.

"What in the world are you going to do with that?" cried the oldest son of the senior Deadun when he saw it on the plans.

"Oh," said Billie, "that's another one of those new fangled business getters."

Some time later, when the new offices were all finished and the company was really going ahead on a progressive basis, an architect, who had always harbored decided leanings toward the universal adaptability of Portland cement, happened into the offices of the Deco Brick & Supply Co. Around the walls were large sized photographs, suitably framed, of artistic designs of brick work in which "Deco" brick had been used. Some showed churches, built of brick in unusual bonds, others depicted clubs, fire places and one showed the interior of a kitchen, done in an artistic combination of blue enameled brick for wainscoting with rough textured gray brick veneer for the sidewalls with bright red repressed brick for the range backing. Novelties in brick construction of all sorts and kinds were shown.

Cost Card System Proves Valuable.

"I never had any idea that you could use brick in so many different ways nor in such varied designs," he exclaimed. He wanted comparative data on costs. They were immediately forth-coming from a cost card index showing cost of veneered brick for different rooms and different uses, applied in proper proportion to houses costing $3,500, homes costing $10,000 to $30,000, and residences costing from $30,000 to $100,000.

After the architect had gone, Billie went into his office and stood before the grate fire in thought.

"If those pictures proved a revelation to an architect, who is supposed to be up-to-date in the matter of building materials, why would they not reveal some artistic possibilities to the average citizen who may be planning to build a home of his own?

Before trying to answer the question himself he called up the advertising departments of the two newspapers in the town and the agents for others through the district he was supplying. He wanted to find out the cost of printing in his regular advertising space, some of these photographs coupled with a short suggestion regarding cost. At the bottom, the ad. said something about free information regarding cost, color combinations and other information, winding up with the words:

"Have a 'Deco' man call at your house some evening."

The Deco crowd had for its selling force salesmen who belonged to that class of which the best thing their co-laborers can say about them is: "They were good salesmen in their time."

The toughest problem any employer has to contend with is what to do with the fellows who have grown old in the service, but who have failed to keep abreast of the times. McManus had been in the employ of Deadun & Co. from the time the business was started. Although always unpressed, sometimes unbarbered, often unshaved and antiquately begaitered, Mac still kept up his dreary rounds and piled up a fair dwindling selling account at the end of the year for the house. He counted upon his old customers who bought Deadun's brick because they knew Mac. "Well," they'd say, "Mac belongs to the lodge, you know; and besides we've always bought our brick through him and really there isn't much difference, you know," McManus's friends, the architects and some builders, would tell the E. N. Terprise salesman when he came around.

Gives E. N. Terprise Run for His Money.

But the fact remained that one by one these old customers were turning over to the E. N. Terprise people and giving Mac the extra or special orders. This was the condition Billie set out to change. Furthermore, Billie was out for new blood that E. N. Terprise hadn't yet smelled.

Billie Deadun, in short, was planning to give E. N. Terprise the biggest run for his money he had ever had. He was not like the standpatter who was satisfied to sit tight and let the new fangled notions be applied time and again by his rival until finally he was forced to adopt the newer methods only to find the more progressive firms so firmly ensconsed and in control of so much of the old firm's business that it was hopeless to get any of it back again.

But there was that effervescent problem of what to do with the old fellows on the staff. Billie was not a cad and his brother Charlie apparently assumed the position that it was better for the business to go under, if necessary, than to do the inhuman thing to Mac, Bowles, Morgan, Evans and Timmins, all grown old in the service, but sadly behind the times.

Billie called them all in the office one day about nine months after he had taken hold and told them that with the first of the year he would make certain improvements in the selling end. All the old fellows were to be taken care of, he said, but in line with putting the business on an efficiency basis the older members of the staff would be expected to co-operate with the new policy. He made it very plain that efficiency was what counted most in the

(Continued on page 444.)

MIDDLE WEST PRODUCES NEW FAIENCE

Increasing Demand for Art-Tile for Decorative Purposes Result in Many New and Attractive Designs being Brought Out at the Wheatley Pottery

By FELIX J. KOCH

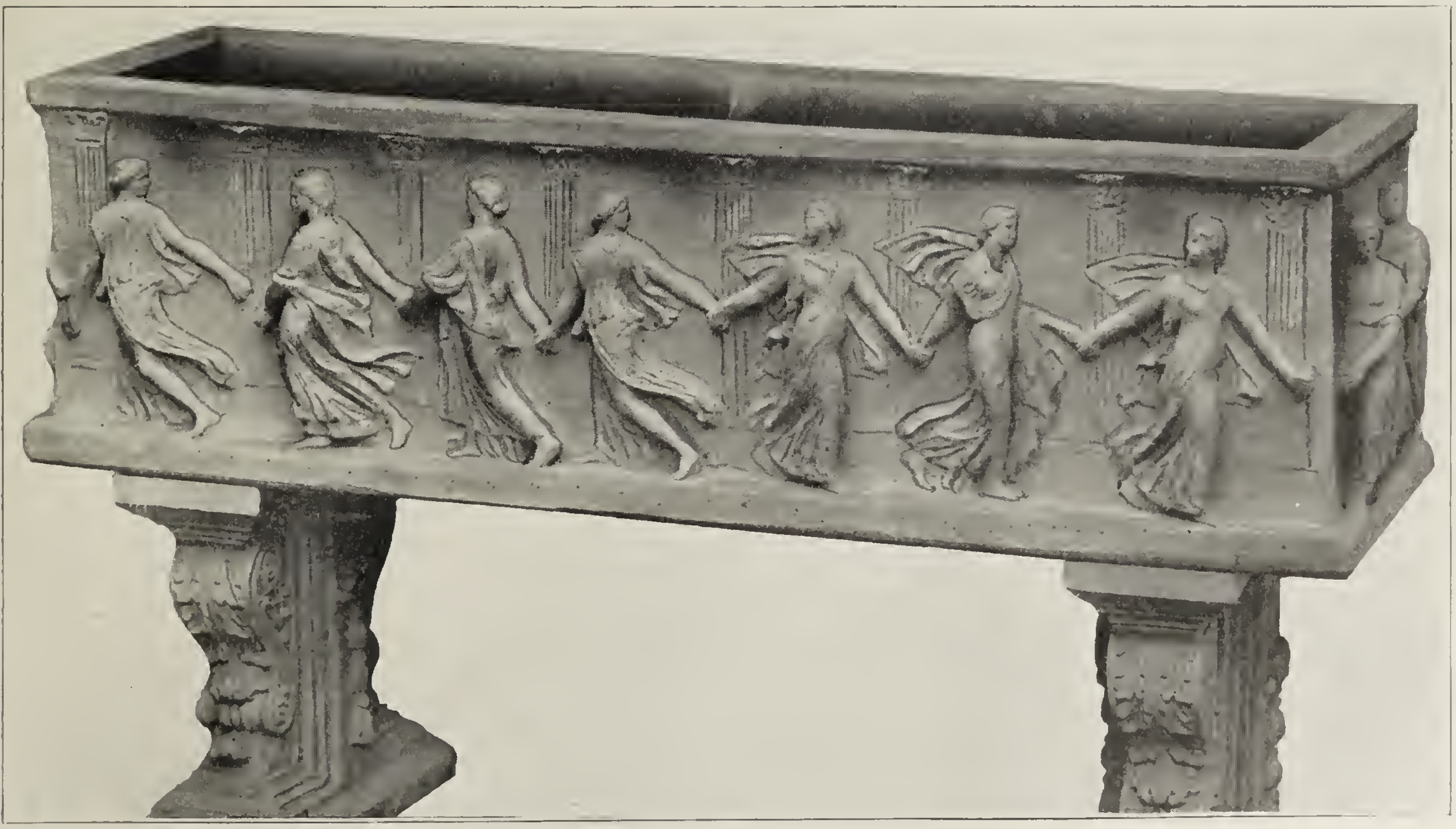
WITHIN a stone's throw, almost, of the place where Mrs. Bellamy Storer started, as a labor of love, what latter became the Rookwood Pottery, in Cincinnati, there is now in operation a pottery of another sort, producing a faience, both for art-ware, tile and decorative purposes, that is catching the eye of the admirer of ceramic students of the midland.

By a queer co-incidence, the inventor of this ware is likewise the man, who first fired a kiln in the Queen City. It is recorded that in 1879 he built the first art pottery in Cincinnati, and at that time, "his experience, skill and ability as a teacher helped to develop and foster an interest in ceramic art that has never since been lost." This man Wheatley, we are told, had for his pupils many of the wealthiest and most brilliant men and women of the land, and not a few of them have since become famous as professional artists. Fortune seemed to smile on the project and a large and well equipped pottery was erected down near the river. Then came the flood of 1884, sweeping it away and leaving only ruin behind it.

Wheatley, much dis-heartened, left Cincinnati for many years, but was finally prevailed upon to return and the pottery was soon re-established this time, high and dry among the hills; and thence, now, the new ware for which he has become renowned is being sent to Boston, New York and Chicago, Philadelphia and even so far away as San Francisco. Pedestals, jardinieres, fern and window-boxes, as well as bowls, vases, and receptacles of every size and shape, and ornamental pieces, such as candle-sticks have been produced in this faience, the predominating shades of which are old ivory and moss green, and these, one critic describes as being, "not like those given to cheap plaster-stuff, but soft, rich, restful and beautiful, speaking of real art and culture." The antique ivory pottery is fashioned and finished after the famous potteries of Florence and Rome.

It is stated that the mossy-matt green pottery had its origin in a discovery of Wheatley's and was greeted with relief, as a change from the somewhat garish effect of the highly-polished glazed ware. It is an unpolished glaze of velvety texture; dark green, like growing moss.

Latterly the pottery is turning largely to the production of tiles, especially for mantel and grate uses but equally serviceable for other uses. These art tiles are made in the matt glaze, in many shades. Moss green and ivory, are favorites with some, while others prefer the leather, shadow green, light blue, grayblue, yellow, or others of the many shades and tones produced. The face-finishes are plain and simulate cut or chipped stone. There are also decorative keystones, center-pieces and panels, all of which play appropriate parts in some of the well designed fire places and chimney nooks of the country, the tile lending a note of refinement, hospitality and substantiability to the hearth.



Replica of Famous Borghese Panel of Dancing Girls, Made by Wheatley Pottery Co.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. DECEMBER 1, 1912 No. 11

TO NON-SUBSCRIBERS

More than ten thousand copies of this issue of "Brick and Clay Record" have been mailed to clay manufacturers in the United States and Canada, which is about all the owners that are ACTIVELY OPERATING their plants.

Of this ten thousand there are nearly three thousand of you who are not subscribers to this journal, and to you who receive this copy and who belong to this class the copy you now have is sent to give you some IDEA of what you have been MISSING by not joining our great family of regular readers.

From time to time we have extended an invitation to you to become a regular reader. During the past thirty days a great many of you have accepted this invitation. However, there are many of you yet who have NEGLECTED the OPPORTUNITY to get a great big value for a very small outlay, and to these we renew our invitation.

We believe that if you can see what "Brick and Clay Record" really is you also will see the advantage of investing a dollar with us.

We want you to examine your copy carefully. Turn to the very first page and read through to the last. The opening article on the Klose kiln should be worth many dollars to you alone, because it tells you of a great improvement in burning. Yet it is just one of many features in this number.

Then there is the article on the use of paving brick in silo construction. Perhaps you have been worrying how to dispose of your surplus stock each season. This article should give you a tip, for it opens up a new field for the brickmakers and NEW fields mean INCREASED demand.

Read the many other articles we have prepared for you. Pay especial attention to the departments devoted to the various branches of the clay industry. Feast on the "The Superintendent" department. Peruse the "Trade Review."

Isn't any ONE of these special features worth a Dollar to you? Haven't you found SOMETHING that will mean Dollars in your pocket?

If this is true and you have found something of value in ONE single copy of "Brick and Clay Record," isn't it reasonable to suppose that the twenty-four issues we print every twelve months will contain MANY MORE that will prove of a hundredfold greater value?

And let us remind you that beginning with the January 1st issue the price of subscription is going to be ADVANCED to $2 a year, and that until that date you have the opportunity to subscribe at the old rate of $1 and that no limit will be placed on the number of years you can pay for.

Renewals, of course, by our old subscribers will be received on this same basis.

Better stick a Dollar bill in an envelope and mail it to us today. We take all the risk and it saves you the trouble of buying a money order or writing out a check.

GETTING TOGETHER

From time to time we have told you about the advantage of the "Get-together" spirit.

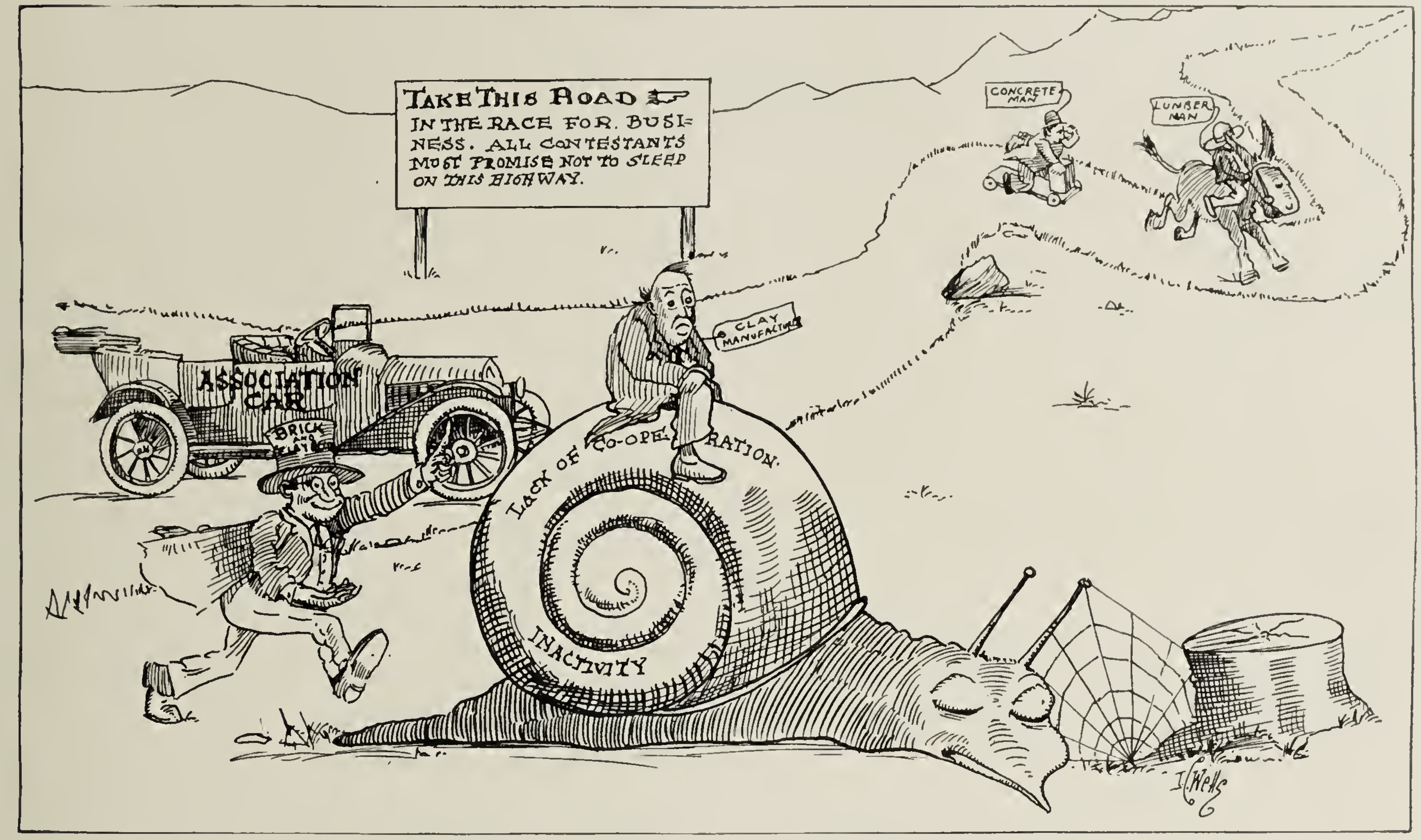
Sometimes in our zealousness we have spoken rather PLAINLY, believing that the occasion WARRANTED plain talk.

There are those who have criticized us for this "unvarnished" way of presenting the point we have striven to convey.

Some of these critics have gone so far as to tell us that we have been UNWISE in our methods. They argue that we might ANTAGONIZE the very people we were trying to convince. They say they RESENT being told of their shortcomings.

Probably this is true. Perhaps we may stir up resentment. In all likelihood we have caused SOME readers to think that we are MEDDLING too much in their affairs. We may have even MADE ENEMIES by speaking frankly.

HEY, THERE! SWAP STEEDS.



We grant all this. Still, isn't it better to MAKE an enemy HERE and THERE and ACCOMPLISH SOMETHING with the masses?

This journal is not printed for just one or two. It is published for the clay manufacturing industry as a WHOLE. Whatever we do or say that will advance that industry will BENEFIT the MAJORITY of clayworkers.

When we say the clayworkers of the nation are are "Asleep at the Switch" and that their common foes—the cement man and the lumber merchant, are alive to EVERY opportunity, we are speaking a TRUTH, however much it may HURT.

When we say the clayworkers of the nation are NEGLECTFUL of THEIR opportunities and have FAILED TO PUSH their product ahead, it is the TRUTH.

When we say that petty jealousies and penny politics have HANDICAPPED the clayworkers we are speaking the TRUTH.

Whatever we have said about lack of co-operation —lack of organization—lack of get-to-getherness is TRUE and we have PROVEN our point by SPECIFIC cases. We have cited ACTUAL experiences to back up our assertions.

For instance:

Once we printed the Government Geological Survey's report on the mineral industries of the United States. In these columns we analyzed this report. It was shown that while concrete MADE RAPID GAINS during 1911, clay products FELL off more than $7,000,000.

From this fact we drew the conclusion that the great increase in the output of the concrete industry was the result of CO-OPERATION among the manufacturers of cement.

We pointed out the vast amount of money these manufacturers had spent during the year in BOOSTING their product.

We told you HOW they got TOGETHER in one great organization—into one large association, and then began to persistently and consistently CREATE a demand.

Again we have cited the case of the lumber dealers throughout the country. We showed you what they HAVE done and what they are GOING to do and we urged you to at least FOLLOW their initiative if you COULD NOT or WOULD NOT take the initiative yourself.

Then we have gone to the trouble to investigate organization work among the branches of the clay industry that already are doing a great work along this line, and have taken the occasion to show you WHAT these HAVE ACCOMPLISHED.

We also have cited specific cases among clayworkers in certain localities who HAVE EXPERIMENTED with local organization work and who HAVE FOUND it one of the most PROFITABLE investments they ever have made.

We have followed a persistent campaign in bringing to YOUR notice these FACTS because they were VITAL facts and were APT to arouse "the sleepers" and stir them to activity.

Is it UNWISE to speak frankly like this to you whom we have PLEDGED to battle for?

Ulysses S. Grant once stated an immortal truth when he said: "In union there is strength."

It is true with the government of BUSINESS interests as well as with NATIONS.

And when the clay manufacturers of the country are made to see this essential fact—when they have organized into a general publicity campaign, then will they come into their own—then will they force the lumber merchant and the concrete dealer to take a secondary position and place their product where it RIGHTLY belongs—at the HEAD.

We have already in the clay industry today several very aggressive organizations. First of all there is the National Brick Manufacturers' Association, the parent body of them all.

While this great body does not PRETEND to interest itself in the COMMERCIAL end of the business, and devotes most of its attention to advancing the MANUFACTURING, it is right that you should become an active member in it, for thereby you are taking the FIRST STEP in association work.

Organization for publicity—co-operation to create a demand, means SELLING. Selling and manufacture SHOULD and DO go hand-in-hand.

Before you can HOPE to make a GOOD salesman you first must LEARN how to be a GOOD manufacturer.

There is no better way to learn all the best methods of manufacture than by EXCHANGING IDEAS with other manufacturers.

There is no better way to exchange ideas with clay manufacturers than by ASSOCIATING with them and the EASIEST way to ACCOMPLISH this end is to join an organization which all, or the greatest number belong to.

The National Brick Manufacturers' Association fills this requirement.

It is composed of some of the oldest and best known manufacturers in the country—men who have BEEN through the school of experience, men who CAN and DO give others the BENEFIT of this experience.

It is composed also of the YOUNGER generation of manufacturers who have all the modern methods and principles at their fingers' tip. These are WILLING to and DO give their BEST to the ADVANCEMENT of the interests of their fellow-members in this great body of industrious clayworkers.

FIRST OF ALL you should join this association —this great parent body of clayworkers, and the time will never be better than NOW for the twenty-seventh annual convention will meet in Chicago in March during the second annual clay show, and it promises to be the MOST PROFITABLE convention ever held.

If you are a member—and mind you, the cost of membership is a very small matter—you will receive the direct benefit of all the papers that are read and all the work this parent association has done and will do.

Then, AFTER you have joined THIS association, DO NOT STOP.

Get the "joining habit" and put yourself in touch with the association that is already formed to advance the interests of YOUR PARTICULAR branch of the clayworking field.

If you are a MANUFACTURER OF BUILDING BRICK write to the secretary of the Building Brick Association of America in New York City and tell him you want to climb into his band wagon.

This association is doing a GREAT work in creating a demand for building brick throughout the country.

The limitation of its work DEPENDS altogether on the SUPPORT it GETS.

The MORE of you who JOIN it the GREATER will be the BENEFIT all over the country.

If you are a PAVING BRICK MANUFACTURER write to the secretary of the National Paving Brick Association at Cleveland, Ohio, and tell him you want to join hands with the other progressive paving brick-makers of the country.

This association is doing MORE for the promotion of brick paving than any ONE HUNDRED OTHER METHODS.

The MORE of you who contribute to its work the GREATER will be the BENEFIT DERIVED all over the nation.

If you are a MANUFACTURER OF DRAIN TILE or SEWER PIPE write to the International Clay Products Bureau of Kansas City, Mo.

This association, like the others mentioned, is doing a most profitable work in its particular line and needs your encouragement and your help.

If you are a MANUFACTURER OF TERRA

COTTA join the American Terra Cotta Association of Chicago.

If you are a **MANUFACTURER OF ENCAUSTIC TILE** join the National Mantel, Grate and Tile Dealers' Association, writing to the secretary at New York City.

If you are a **MANUFACTURER OF POTTERY** affiliate with the United States Potters' Association, of East Liverpool, Ohio.

If you specialize in the manufacture of **FACING BRICK** get into communication with the American Face Brick Association, with headquarters at Cleveland, Ohio.

If you are interested in the **TECHNICAL SIDE** of the industry there is no better way to get the benefit of the experience of others than by joining the American Ceramic Society of Columbus, Ohio.

No matter what branch of the clay industry you are particularly interested in there is **SOME** sort of organization that can help you and you are **MISSING GOLDEN OPPORTUNITIES** if you do not take advantage of it.

And the **TIME** to **TAKE** this advantage is **NOT** tomorrow, nor the next day, but **TODAY.**

* * *

ABOUT OURSELVES

Most persons **LIKE** to talk about themselves.

This, usually, is because they **KNOW MORE** about themselves than they do about **OTHER** persons, and it is **NATURAL** to talk about subjects we are **BEST ACQUAINTED** with.

However, there is danger in talking **TOO** much about ourselves. We are likely to **BORE** our listeners. Instead of **CONVINCING** them we are more apt to **TIRE** them.

Still, if we are **WORTH** talking about and do it diplomatically and briefly, we may **INTEREST** instead of **BORE**, because oftentimes others **PROFIT** by **HEARING** what we **THINK** about ourselves.

Of late this journal has experienced a growing desire to talk about itself—particularly of its hopes, aims and plans for the future.

We have so **MANY** good things stored up for 1913 for our readers we feel it is **UNFAIR** to keep them secret any longer.

To begin with we want to tell you about a series of articles that will begin with the January 1st issue. The subject to be treated is one that has been much **NEGLECTED** not only by the clay journals but also by the clay manufacturers themselves.

''Salesmanship'' is the subject. Most clay manufacturers **KNOW** the art of making clay products from the Alpha to the Omega.

This is because all the text books, all the writers, all the experts and all the lecturers have devoted their **ATTENTION** to this **ONE** subject.

And there was a reason for it, too.

You see it was not until recently that the brickmaker **REALLY KNEW HOW TO MAKE BRICK**—that is, the **PERFECTED** brick of today.

He didn't have the modern machinery.

The chemist had not taken up the serious matter of analyzing his clay and showing him **HOW** to handle it to get the **BEST** results.

The scientific man had not **BOTHERED** himself with the **BURNING** of clay.

But when all these busy bees in the hive of industrial progress **DID** turn their attention to clay, problems that had **BOTHERED** the clayworker for years were solved.

Short cuts and easier methods were found.

Decreased cost of operation and increased capacity followed.

Today the brickmaker **KNOWS HOW** to make brick. The tilemaker **KNOWS HOW** to make his ware. The terra cotta manufacturer **KNOWS HOW** to **MAKE** his product.

But **NOW** all these clayworkers have **ANOTHER** problem to **SOLVE** and it is just as **IMPORTANT** as the problem of manufacture was.

This problem is that of **SELLING** what they **MAKE.**

Salesmanship is an art or a science in itself just as is working clay into articles of utility.

And anyone **CAN** be **TAUGHT** to sell just as they were taught to manufacture.

Some persons **PREFER** to learn in the school of experience. It is a good school but it is a slow school.

It is better and cheaper and far more satisfactory to profit by the experience of others.

It is better to get the fundamental principles at least and then try the school of experience, if you **MUST** attend that school.

This ''Salesmanship School of Instruction,'' however, is not all the good things that are to be given our readers during 1913.

There will be the usual space devoted to the manufacturing end.

There will be the practical articles on burning as well as the manufacture of clay products.

There will be the ''Question and Answer'' department with the solution of the knotty problems that come up from day to day.

There will be the various departments devoted to each branch of the clay industry and because of the increased size of the magazine these departments will be larger, more comprehensive and will appear regularly in each issue.

STATE UNIVERSITY MAKES CLAY WARES

Laboratory Experiments Show Means of Utilizing Clays Hitherto Considered of Little Value—Many Problems to be Worked Out Scientifically

By R. T. STULL

SKILLED clayworkers are in great demand and are worth many times over what they cost to the firms employing them. Many problems confront the clay manufacturer, such as reducing the cost of production, improving the quality of the product, the development of new products, new colors and new glazes, the designing of clay working plants, kilns and driers. In one case the ceramic graduate has increased the quality of the product over forty per cent; in another case decreased the cost of production over twenty per cent.

Manufacturers are bringing their problems to the School of Ceramics for solution. In this way thousands of dollars have been saved for the manufacturer. Three plants are now manufacturing brick from clays which were located and tested by the Ceramic School. Kilns and furnaces are perhaps the most important part of the equipment in the manufacture of ceramic products, and the fuel problem is always a question of importance to the manufacturer. Thousands of dollars are lost annually by bad control of the kilns and improper combustion. Problems relative to kiln control and fuel combustion are studied. In Figure 1 is shown an instrument which can be connected to the chimney or flue leading from the kiln. It automatically records the per cent of carbonic acid gas in the combustion gases going out of the kiln. This record indicates whether in order to obtain the highest efficiency of the fuel it is necessary to admit more or less air to the kiln. The question of obtaining full value out of the fuel has been one of the perplexing problems in clay manufacture.

The Drying Problem.

Again methods of manufacture with one clay may be a total failure with another. Consider the drying problem. Clay swells when water is added to it in order to make it plastic so that it can be molded into a brick, a piece of pottery, or other desired shape. One sort of clay may dry most satisfactorily, another may crack and warp badly. Figure 2 shows an electric oven used for studying the drying behavior of clays. The temperature of the oven can be regulated accurately to any degree desired and it will maintain that temperature indefinitely. What do such experiments mean practically? Let me cite a single instance.

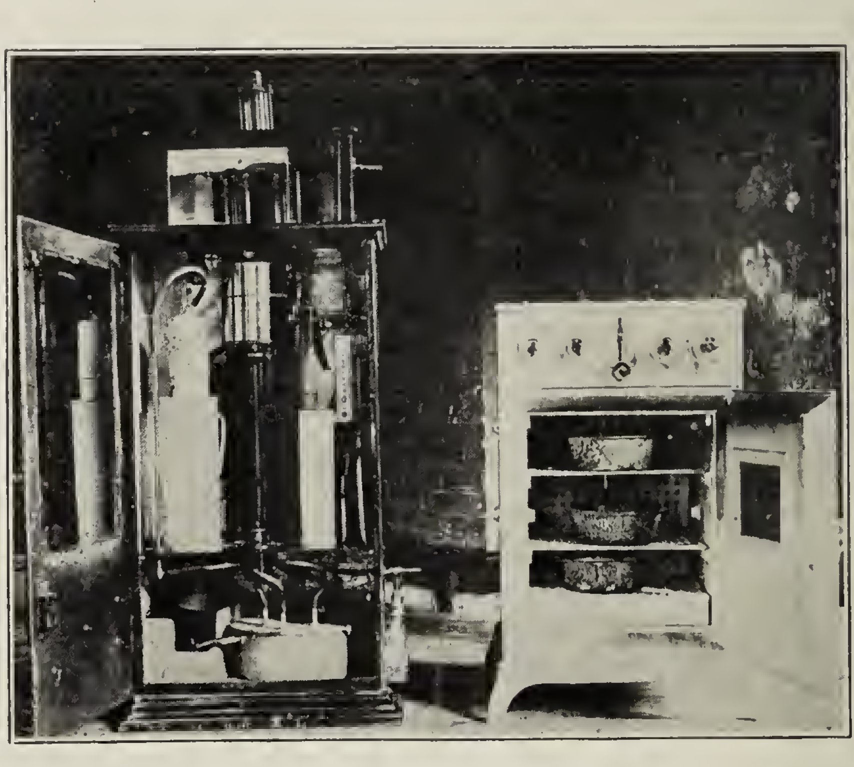
A large area in Illinois is covered with a sticky, plastic, yellow clay called "joint clay." When molded into brick or drain tile, this clay warps and cracks so badly in drying that for a long time it was considered useless for manufacturing purposes. Four years ago the School of Ceramics took up the study of these joint clays. An inexpensive drying treatment was found and now these clays can be made into brick and tile as safely as any other clays. Hence, through the patience of the scientist the useless became useful and clay banks spouted automobiles.

New Enameling Process.

Other problems that are receiving attention are glazes and colors for decoration and enamel. There is a great demand for odd colors in brick for building purposes. Indeed, glazed and enamelled clay products are in high demand for building purposes.

Especially is there a demand for glazed and enamelled brick because of their beauty and sanitary qualities. The greatest drawback to the use of enamelled brick has been their high cost, due to the fact that the enamel coating is applied by hand before the brick are burned. In some cases it is necessary to make three applications of the enamel in order to get the coating thick enough. Now this may all be done away with and the selling price of enamel brick cut in half within the next two or three years. How? By the use of a die which has been invented for molding the brick and spreading the enamel upon its faces at the same time, thus doing away with expensive hand labor and much loss in breakage due to handling. The machine, which works similarly to an old fashioned sausage grinder, forces out a continuous stream or bar of plastic clay with its enamel coating. The veneered column then passes upon a cutting table where it is cut into the proper lengths for brick by a series of wires supported on a framework or reel. The brick are then dried and burned in the kiln.

Glaze mixtures, porcelain veneers and different colored clays have been successfully applied by this machine. There are a large number of clays which do not develop a pleasing color for a building brick. These clays can be veneered with mixtures giving almost any color desired.



Apparatus for Use in Clayworking Department, University of Illinois. Note the Electric Oven at the Right.

Clay for coloring can be secured for less than a dollar a ton—enough for two million brick.

Clay by the carload which will give a very pleasing color can be secured for less than a dollar a ton, and a carload would be sufficient for over two million brick.

The value of thorough organization is daily manifested in every walk of life, from the busy clay plant to the smallest household. Divorce is the result of lack of organization and harmony in the home. Bankruptcy frequently follows lack of organization and co-operation in business affairs.

CANADIANS BUILD SCHOOL BUILDING OF BRICK

Oakwood High School Bldg., Toronto, Canada, Built of Brick Made by the Don Valley Brick Co., Toronto.

THE TECHNICAL MAN IN THE CLAY INDUSTRY

(Continued from Page 418)

The before-mentioned capitalist goes out on the yard; the technical burner approaches him, shows him a good kiln of ware, and then launches off into a description of an intricate reaction which has taken place during the oxidation period. The gentleman with the eye to the main chance listens politely, nods wisely, and gets away as soon as he can. That night he reflects that, "That college feller is a visionary sort of a cuss, but his kilns look pretty good, so I guess I'll keep him."

Business Instinct Necessary.

Suppose the technical burner is wise instinctively, or has in some way secured some hard-headed business ideas; he approaches the representative of the capitalistic class as before, shows him a good kiln of ware, tells him he is carrying on some technical experiments, conducted with such caution that even if they go wrong there won't be much loss, which he feels will quite likely save one-tenth of the burning time, which means one-tenth of the coal, or twelve dollars a day, besides increasing the kiln capacity as much as if he spent $2,500 building that new kiln he spoke about last week. Furthermore, by spending $50 for fixing up the roads, the size of the coal carts can be increased so that the horses can haul a ton and a half, thereby saving one cart and man, and paying for the investment in about a month, after which there will be a net saving of two dollars per day. Contrast the aforesaid plutocrat's post-prandial musings with those which have gone before. Will he keep him? Will he raise that college man's salary? Will he make him assistant superintendent? What does he do? He bounds from his easy chair and does the hundred yards across the street in ten flat to warn his business competitor against wasting any money on technical men! Well, even if he doesn't, that college man has achieved his success.

A couple of years ago an English engineering society conducted an investigation to find out why so few engineers were a business success. The conclusion was that the very fascination of the work was such that engineers very seldom cared to give attention to the business detail, the general advertising, etc., that are needed to make commercial enterprises a success. Contrast for yourself the number of engineering firms in this country which are known to the general public with the banking firms, the merchants or the manufacturers who are spoken of daily. You all know about Marshall Field, Sears-Roebuck, J. P. Morgan & Co., the International Harvester Co. But who built the Blackstone Hotel, the Brooklyn bridge, the Chicago drainage canal, the Singer building, and many others which you see daily?

There would seem to be almost a conspiracy on the part of nature to relegate the commercial to the background in the engineering profession. Why does a man become a professor in a technical school? Because his strong commercial instinct drives him to it to make large sums of money? Well, hardly! It is because his high ideals, his love of his profession, his paternal instinct or something equally strong in him drives him to look down upon mere money-getting as a thing of relatively little importance.

What chance has the boy, spending the four formative years of his life, to absorb commercial training when he is looking up to an instructor who despises it, and on top of this, studying the most fascinating profession in the world—that of causing things to grow by one's own hand and brain? If the boy develops a strong commercial instinct, it is in spite of his environment.

The remedy, if the clay schools want to turn out men who will achieve success by climbing to positions of trust in the clay industry, lies in a wise blending of the commercial with the technical during the latter part of the college course. Studies in cost-keeping, and the reduction of costs, labor-saving devices, plant organization, etc., etc. It is unfortunate that we are a sordid, money-getting nation, but since we are most of us have to choose between falling in line or becoming one of the unfittest who fail to survive.

The other weaknesses of the technical graduate just from college are, most of them, of the gentle order, which, though we ridicule, we nevertheless feel kindly toward. He does love his flannel shirt and his high boots. He hungers for a title of some sort—third assistant coal shoveler, or almost anything will do at first. If he happens to get into one of the white shirt departments, he isn't happy until he has acquired a desk and several push buttons which will bring a stenographer or a page on the run. These things don't matter much, because if he is the right sort he will become so interested in his work that he will forget all about such vanities. If he isn't, he will receive some hard knocks which may show him the relative importance of things in general, or else will put him in the ranks of the great army of the unlucky.

Ceramist Often Unjustly Blamed.

The errors on the part of the practical brickmaker or business man who hires a technical man fresh from school are, for the most part, the converse of those already mentioned with the college man. Of course, if the business man is new at the clay business, he may blame, without just cause, the ceramist for a lot of the uncertainties of the clayworking industry. In such cases the capitalist has to learn at the expense of the repudiation of several superintendents that a hundred tons of clay in the bank does not produce one hundred tons of No. 1 quality paving brick or sewer pipe. Even the experienced capitalist or brickmaker owner is very often prone to expect too much of the technical graduate; he perhaps puts him in a position of responsibility in which he, through lack of commercial experience in handling men, is not able to make good. Perhaps he fires his burner after the technical man has been on the job a few days, and expects a man who never fired anything bigger than a test kiln to raise heat on thirty-foot kilns, keep the coal bill down, produce 90 per cent No. 1 ware, and economically handle a gang of laborers. If he falls down, that brickmaker is through with technical men for good and all.

If he would watch his man closely and place responsibility upon him as he is fit for it, meantime giving him the same sort of talks he would his son if he started him to firing kilns; if he did not expect too much of him, would help him and make him see that his criticism was friendly and for his own benefit, the brickmaker would develop a man in most cases, after a year or two, upon whom he could depend, and who would be of inestimable benefit to his business.

Let us assume that we have in our clay plant a man who has been properly trained in a ceramic school, who has had properly developed in him the commercial instinct and who has had a year or two of practical experience, during which, the brickmaker has carefully drawn out his abilities, supplemented his weaknesses and given him the sympathetic encouragement he would have given a member of his own family. What can such a man do for the non-technical brickmaker or business man?

What the Trained Ceramist Can Do.

In the first place he is well grounded in the theory of ceramics. A fault which to the ordinary burner or factory foreman is a calamity is, to the ceramist, a problem to be met, tackled and solved. Instead of blindly and frantically applying one rule of thumb after another, he has a trained mind, which enables him to analyze the trouble, separating it into its elements, putting aside all the elements which are identical with the elements before the trouble, and concentrating with a series of experiments upon the elements which have changed, in such a way that, by a careful process of elimination, he discovers the exact element, the change in which has caused the trouble. By correcting this he corrects the trouble and puts the process back upon its former successful and paying basis. To help him in work of this kind he has all that he learned at school, his familiarity with practice all over the country and abroad and a wide acquaintance with other technical men who will gladly respond to his call for help.

When troubles are encountered which require a knowledge of chemistry to solve, such as scumming, he can run an analysis, locate the cause and eliminate at once the source of loss which would take weeks of experiment to locate and do away with.

He is familiar with all the latest technical apparatus, knows how to burn the kilns the same whether the wind is blowing four or forty miles an hour. He knows with his Orsat how much of the coal is going up the stack when it should be heating up the ware. He can make the burning so simple with his pyrometer and his Seger cones that every man on the burning shift, provided he is ordinarily intelligent, can finish his own kiln. This raises the coal shoveler's job to the dignity of a trade. The men take an intelligent interest instead of being mere mechanical devices, and you'd be surprised how this intelligent interest in burning on the part of your workmen cuts down your coal and shoves up your percentages.

By means of his careful records of every operation he makes his experiments—and experiments cost money, no matter how conservatively conducted—the property of the manufacturer, rather than the personal experience of some close-mouthed burner who holds his job because the boss don't dare fire him.

Uses Pencil Instead of Shoe Leather.

He wears out pencils instead of shoe leather, and instead of chasing all over the place and trying to be in seventeen places at once, he drops down on one of his foremen with the piece of information that it cost him twice as much to dig clay the day before as it did last week, and he wants to know why, and if it can't be stopped.

He works up statistics to show which kiln has been most economically operated for the past six months, and then comes around and shows you that for three hundred dollars you can change one of the kiln bottoms, reduce your coal 10 per cent, and increase your percentage 15 per cent on that particular kiln.

When he has troubles with the burning, what does the old-fashioned burner do? He blames it on the clay, fires one of his men, or else lengthens out the whole burning period. The technical man studies the trouble, relegates it to its own particular period—water-smoking, oxidation or vitrification—lengthens out that period two or three hours and eliminates it. Instead of upsetting your plant from mine to siding and ending up by cutting down your kiln capacity and increasing your coal bill, he gives the early oxidation perhaps three hours more—maybe cuts three hours off the water-smoking at the same time.

Furthermore, he knows when your kilns are running at the highest efficiency. If he hears of a drop in the price of oil, he begins to figure right away how much it would cost to change to oil and what the saving would be in a year, where your old-time burner would be so scared if you said "oil" to him that he wouldn't be able to tell whether the next kiln he looked into was red or pink.

All these and many more things the properly taught and experienced technical man can do for the man whose capital is invested in the clay industry"provided he will let him.

SEATTLE'S HALF-MILLION DOLLAR BRICK HIGH SCHOOL

KANSAN MAKES CONTINUOUS KILN FOR $3,000

(Continued from page 412)

heat from the kiln and which is so constructed as to form a compact unit with the whole.

THIRD—A continuous tunnel kiln which can be constructed at the minimum of expense and at the same time prove efficient and economical.

To attain these results Mr. Klose has brought into play the most simple of devices and the acme of space economy.

In the conveying system, a double elevator—electric, is located at the cutting machine and takes the green product to the floor above where the drier is located. An inclined gravity elevator also of Mr. Klose's own design, lowers the loaded pallets from this floor of the drier room in such a way a Yale & Towne triplex hoist can pick it up and convey it to the setter, a small boy operating the entire device with ease.

In the drier, again, there is the utmost simplicity. This room is located immediately over the kiln and the heat which the kiln loses by radiation is taken advantage of, it passing through an open floor and circulating freely among the green ware. The combustion gases from the kiln are also used and, despite the simplicity of the arrangement, the goods are dried perfectly, free from cracks and not to be improved upon.

This, in brief, is the general idea of the Klose system, which further in this article the writer will attempt to describe more completely. It is just what one ascertains in the first five minutes he is in the plant, so simple is the entire arrangement. Of course a more careful inspection of the Klose system reveals its carefully planned details but even with the brief few minutes devoted to one's first trip around the plant, one feels he could rush home and superintend the construction of a plant "Just like it."

"How did you happen to hit on this idea?" you ask Mr. Klose. It is a natural question to ask because you feel you would want to know how you missed accomplishing the same thing.

Discovery Largely Accidental.

"I might say it was an accident, for we learn in the newspapers that most good things were worked out in that manner," smiled the young German. "But it wasn't."

As he spoke I thought of Sir Isaac Newton and the falling apple which gave to the world the first knowledge of the law of gravity and then of Watts who, watching the boiling water kettle, suddenly hit upon the idea of utilizing steam as a motive power. Truly most of the world's greatest ideas came from accident. I was just on the point of agreeing with his first statement when his assurance he was not to be classed with Newton, Watts, Edison and most of the other geniuses who have achieved something, caused me to pause.

"No, it wasn't so easy as that," continued Mr. Klose. "You see I was forced through necessity to work out some sort of system like this. I wanted to get into the brickmaking business because I understood it, but my capital was limited and the present-day methods far too expensive to permit me. Then, too, being brought up in the German way, I believed in the continuous tunnel kiln and that, of course, added to my difficulties because the old continuous kiln, while being, to my mind, the very best method to use in burning clay, is almost prohibitive in its first cost."

I watched his face closely as he talked. There was a gleam in his eye that spoke more than words. I could see that my question had opened up memory's chamber and that he was traveling back to the days only a short time ago when ambition seized him and he began the fight to become something. I could picture in my mind the long dreary days of his struggling as his eyes lit up and I could see the illuminated smile on his face as he turned and looking at the kiln that laid hidden beneath our feet, pointed to it.

"And, well, so I made this," he added and he left me standing admiring the matter-of-fact way he talked of his invention as he hurried away to give some instructions to one of his men who had interrupted us.

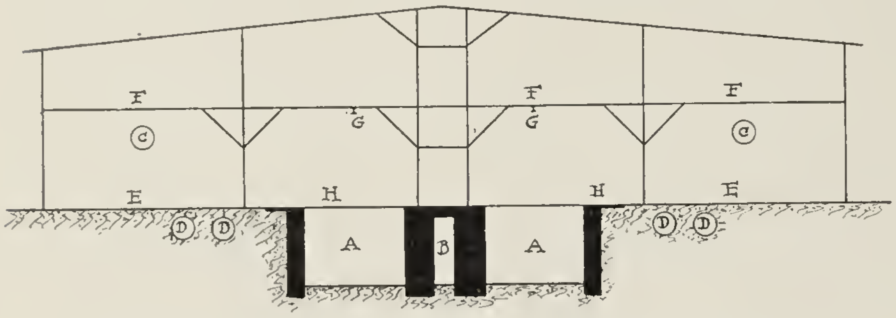
He wanted to make brick and he had to figure out a cheaper way or he couldn't do it! No romance about that. No dreamy picture of a moss-covered bank and a good fairy dropping the gold-ladened idea into his idle hands! He had to figure out a cheap way and so he dug a hole in the ground and built four brick walls—and there you are!

Mr. Klose is a most reticent man. He doesn't like to talk—especially about himself or his burning and drying system. But he can talk and will talk if you approach him just right, as I found out but you must let him choose his subject and if you do it is dollars to doughnuts that it won't be Klose or his kiln.

I wanted him to talk about his invention, however, and so I used all the diplomacy and tact at my command. He was as suspicious as an old maid who always looks under her bed. I had found in the earlier part of our conversation that he was very much interested in the continuous kiln as most Germans are, so I hoped to draw him out and cleverly swing the subject around to himself and his own kiln. The thought was a happy one.

Continuous Kiln of German Origin.

"Yes, the continuous tunnel idea is a German idea," he replied to my first question of attack. "You see the Germans always figure on economy as well as efficiency, so the continuous tunnel was developed. All clayworkers admit the continuous kiln principle means fuel economy and it is no uncommon thing to see advertisements and lecturers proclaiming that 1,000 brick may be burned with from 200 to 400 pounds of coal.



Explanation of Cut: AA—Burning channels. B—Main smoke flue. CC—Main smoke flues as radiators. DDDD—Hot air flues. EE—Lower drying floor. FFFF—Upper drying floor. GG—T-Beam line. HH—Pavement. Patents pending.

"However," continued Mr. Klose, "this economical process of burning has been used in this country to a very small extent. This is because the great expenditure of money which the construction of this sort of a kiln involves causes you Americans to investigate very slowly. Then, too, there is the greedy engineer who realizing the advantage of the system but with little experience in its construction, foists on the Americans something that he has hurriedly planned. Failure is sure to follow and these isolated cases have caused an unjust prejudice throughout the country.

"In other instances, failures may be attributed to attempting to use the kiln for the burning of clay products for which it is utterly unfitted. The continuous kiln, in its many modifications, is particularly adapted for the burning of common brick, unglazed hollow ware and farm drain tile. Unless especially designed as mine is, to pre-heat the bricks without their coming in contact with impurities that the combustion gases carry to them during "water smoking," the continuous kiln will discolor from 30 to 40 per cent of dry pressed brick. In my kiln I have avoided this.

"A well-designed continuous kiln is unquestionably a source of revenue and pleasure to its owner. It defies competition both in regards to fuel consumption as well as quality of product. Furthermore, with its steady daily output it brings into every yard a clock-like system which never can be reached when periodical kilns are used."

He was warming up to the subject. I felt it was only necessary to lead him gradually around to Klose and his kiln by a few well-placed questions and suggestions.

It didn't take long to realize that Mr. Klose knows the continuous kiln from the Alpha to Omega.

Principles of the System.

"Few people," he continued," really understand just what the principles of the system are, but all types are fundamentally the same and the object of the system may be summed up in four sentences:

"First, to recover the heat from the burned brick.

"Second, to use this heat for heating the feed air necessary to support the combustion in the burning sections.

"Third, to use the waste heat from the burning sections to heat up the green brick preparatory to burning.

"Fourth, to use such heat from the cooling brick, which is not required for heating the feed air, and applying it to dry off the green brick.

"As I said, most tunnel kilns are designed to use all four of these fundamental principles. When they are given the proper dimensions and are correctly operated they give about the same efficiency. The great trouble, however, is that nearly all of them are of complicated construction. The continuous expansion and contraction of the kiln walls is apt to cause leaky flues. Another serious trouble is in using the heat from the cooling brick for the drying of the green brick. The ordinary arrangement of the tunnel kiln makes it imperative that only perfectly dried brick shall be set in the kiln.

"This is one of the features I sought to improve upon when I designed my kiln," continued Mr. Klose. "Of course that is only one of several ideas I considered. You see I can use this fourth principle of the tunnel kiln and do not have to worry about my green brick being bone dry."

The young German halted suddenly. Something in my manner must have betrayed my satisfaction at the drift of the conversation. With a hasty word of apology, like a blushing school boy caught in the act of some forbidden prank, he excused himself to speak to one of his employes and when he returned he parried further questions and turned me over to one of his assistants who proved a valuable guide and far more communicative.

Kiln Simply Constructed

Your first brief view of the kiln impresses you with its great simplicity in construction and operation but a more careful one reveals hidden features that almost startle you in their absolute lack of complicated design.

The Klose kiln is built underground—every inch of it. It has neither doors nor arches and not only is the cheapest kiln possible to build—just four simple walls being required in the brick work, but it is, because of its construction, as durable as human endeavor can make a kiln.

A detailed examination of the kiln reveals eight strong points. They are:

IT HAS no arches or doors, and therefore construction is simple and inexpensive.

THERE being no arches the men can enter the kiln and

work with comfort, free from the danger of poisonous gases.

THE setter and drawer work close together and little kiln room is required.

IT is cheaper and easier to transport brick into and from the kiln than in the arched-over kiln.

THE changing of the removable cover from the burned brick to the freshly set brick requires less work than the taking out and setting in of kiln doors.

THE kiln has a great flexibility in regard to burning different kinds of goods, as the distance between the feed holes can be changed at will and according to requirements.

THE kiln, in connection with the Klose drier, concentrates the entire plant in one building, reducing the handling of the brick or other product to a minimum.

Another feature about the kiln may be used with safety. Reference is here made to utilizing the heat from the cooling brick to dry the green goods. The hot air flues lie outside of the kiln walls and are placed in communication with the burning channels by means of removable sheet iron pipes. This simple arrangement eliminates the trouble from contraction and expansion.

Nearly all continuous kilns in use today have the smoke exits from fifteen to twenty-four feet apart. Whenever a damper is opened a great quantity of green brick is suddenly exposed to the moisture-laden gases coming from the burning fires. A portion of this moisture condenses upon the cool brick and causes a poor quality frequently. The Klose kiln prevents this danger by having the smoke exits four feet apart. The hot air inlets are at short distances apart from each other and opposite the smoke exits. This arrangement assures a gradual warming up and a complete watersmoking. When required two hot air flues instead of one are used, one carrying air of lower temperature and the other of higher temperature.

New Type of Dampers.

Another source of trouble in the ordinary tunnel kiln is in the dampers. Cast iron dampers frequently warp from the heat and permit considerable heat to escape into the smoke flues. Mr. Klose has eliminated this danger altogether by making the connection between the burning channels and the smoke flue by means of removable pipes.

The main drying floor is located just above the kiln. There the heat which the kiln loses by radiation is taken advantage of for drying the green brick or tile. The floor of this room is made of three-inch boards laid an inch apart. This arrangement permits of a free circulation of the radiated heat and with the enclosed walls to prevent drafts the green manufactured product is dried slowly and evenly.

To augment the heat obtained from radiation the heat from the combustion gases is used. These gases leave the kiln at about 240 degrees Fahrenheit and contain considerable steam, coming as they do from the hygroscopic and chemical water of the clay. By cooling these gases off the steam is condensed, the latent heat regained and the volume of gases reduced thus requiring a smaller size fan.

The regained heat more than pays for the running expense of the fan which Mr. Klose prefers to a chimney in any case. The fan, he argues, creates a powerful and even draft, and eliminates the great cost of building a chimney of such magnitude as is required by the average continuous kiln for satisfactory operation.

One striking characteristic of the Klose Kiln is the perfect product it turns out. Unlike most continuous kilns there is practically no waste. The work is burned from top to bottom and from side to side.

The visitor remarks on the economy of the drying system and only a cursory inspection shows that there is little encouragement for anyone to attempt to lower the record of the Klose kiln and drier arrangement in respect to fuel economy.

The transportation arrangement consists of a "U" shape "I" beam which is fastened to the joists of the drying floor and which runs over and along the center lines of each of the two parallel burning channels. Along this "I" beam a trolley travels to which is hooked the electric hoist. Mr. Klose's system, however, makes provision for the small yards whose requirements are not so great. A hand triplex block may be used instead of the electric hoist, the speed of the transportation being reduced as well as the cost of installation and operation.

By means of a pallet grip the hoist picks up the loaded pallet, a boy transfers the load along the "I" beam line to the setter where the pallet is lowered and released. The hoist now picks up the pallet, which another boy has loaded with burned brick, raises it out of the kiln and transfers it to the end of the kiln from where a trucker takes it, either to the stock pile or into the railway car. The brick usually are handled in units of 200 to 240 per pallet.

Work of Wheeling Reduced.

All the heavy work of wheeling is reduced to a minimum and the unhealthy work of going continuously into and out of the hot kiln is done away with by the Klose idea.

Another excellent feature in the conveying system is the manner in which the green brick are taken from the upper or drying floor. The loaded pallet is lowered by an inclined gravity elevator in such a way that the hoist can pick up from the elevator platform.

The setting and the operation of the kiln is almost the same as that of the standard Hoffman kiln. The two burning channels are filled with brick or tile in such a way that rows of longitudinal alleys about three feet apart are formed along the floor. From these flues upwards a multitude of small vertical shafts are arranged. The filled portions of the burning channels are covered by a platting consisting of two flat layers of brick and three inches of sand or clay.

Above each of the vertical shafts a small five-inch damper is set. Through these, at the proper time, the fuel in the form of coal screenings, is dropped in small quantities at short intervals. This firing is kept up for a distance of from 40 to 50 feet, forming a continuous fire which is gradually advancing 15 to 30 feet per day and continuously revolving with the endless burning channels.

As the feed air passes first through the burned or finished sections it reaches the burning flue in a well-proheated state and, therefore, requires but a small amount of fuel to raise the temperature to the desired degree. From this fire-flue the combustion gases are caused to pass from 50 to 60 feet further through the green brick thus heating them preparatory to burning.

The kiln, of course, like all continuous tunnel kilns, once the fires are started, is never permitted to cool. Burning is continued night and day, Sunday and week days, and the output of the kiln is steady. For every pallet of burned brick taken out another of green brick is set in the kiln. It is this continuous burning that makes the system so economical, and with the Klose patented features still greater economy is obtained

Mr. Klose has a most wonderful system and more than one inquisitive brickmaker is going to visit his plant at Seneca before the opening of the spring season.

POTTERS' HOLD SUCCESSFUL MEETING

Optimism and Enthusiasm Prevail at Thirty-fourth Annual Convention of the United States Potters Association. Many Important Subjects Discussed

The pottery industry, which has shown a steady increase for the past thirty years, is in a most prosperous condition. Thorough organization, freedom from strikes and a general feeling of good fellowship among pottery men have been marked factors in this development.

One of the reforms which the association proposes to institute, is rigid factory inspection, with a view of securing more sanitary working conditions and eliminating chance for contracting diseases.

THE Thirty-Fourth Annual Meeting of the United States Potters' Association was held in the Ft. Pitt Hotel, Pittsburgh, Pa., Nov. 12-13. There was a larger representation at this meeting than any session the association held in a decade. The manufacturers talked shop in their meetings in a most optimistic vein, and it was the general opinion that 1913 would prove a banner year in the production of American pottery.

The following officers were elected for the fiscal year:—President, Harry D. Wintringer, of the Steubenville Pottery Co., Steubenville, O.; first vice-president, William Burgess, Trenton, N. J.; second vice president, Frank A. Sebring, of the Sebring Pottery Co., Sebring, O.; third vice president, Will S. George, of the W. S. George Pottery Co., East Palestine, O.; secretary-treasurer, John T. Cartwright, of the Cartwright Bros. Pottery Co., East Liverpool, O.

Suggestions made in the opening address of President protem Wintringer were carried out in an executive session. Because of the recent death of John M. Pope, of Trenton, N. J., president of the association during the last year, vice president Wintringer, through an action of the executive committee took the chair before his election for the coming fiscal year, this being the last action taken by the association.

The time and place of the 1913 meeting has been left to the decision of the Executive Committee, of which Col. John N. Taylor, of the Knowles, Taylor & Knowles Pottery Co., of East Liverpool, O., is chairman.

President Wintringer's Address.

Mr. Wintringer in his opening address said:

As an organization we have grown steadily during a period of more than a third of a century, until now we are producing annually in our own lines probably $17,000,000 worth of finished product. A study of the government statistics for the past three years reveals some satisfactory information, chief among which is the authentic report that the total importations for the government fiscal year were $9,997,698, as compared with $11,411,665 for the previous period and $11,021,126 for 1910. This would certainly indicate that, granted only reasonable protection as in the past few years, for the more thorough development of artistic and graceful shapes and decorations, and especially for the promotion of greater pride in our product, we still have larger and more satisfactory fields to enter.

In this connection I should like to respectfully submit an observation I have made on the matter of our decorations. It is that in the past three years probably greater progress has been made in decorating dinnerware in this country than in any previous period of twice that duration, and I am convinced that this is only the beginning of what we may hope for in this direction in the future.

Much Scope for Originality in Design.

There is now much greater scope for the individuality of the manufacturer, due largely to the advent of decalcomaniae, and as a consequence there are hardly two decorated dinner lines of precisely the same merit or style. This should tend to the production of higher class goods of distinct merit and the more we give play to our ambitions along this line the larger the field exposed to our vision, and the more removed we are from the necessity of ruinous price cutting. Therefore, I suggest that we seriously consider any and all means at our command as an organization to encourage development both in the quality and shapes of our product, as well as the just as important feature of decorating and treating these goods in a manner sure to bring us recognition and encouragement.

I submit for your consideration a proposal that we discuss the advantages of an organization separated entirely from this, and composed of superintendents, clay shop foremen, heads of decorating departments, etc., intended to be purely social in its functions and to meet, say once a month, for a modest banquet, providing for a few papers or addresses of mutual interest and for general discussion of topics that will tend to develop and encourage these men. It seems to me that such a project would help us greatly and tend to the better development of the men who are training for these various positions.

It is unfortunate that we are confronted by a situation now absolutely requiring a somewhat higher level of prices for our product, and it is quite out of the question for us to ignore the necessity of a readjustment of prices to meet present manufacturing expenses. It is only needed to remind you of those of our number who fell by the wayside during the past year, and it seems to me quite within our right to encourage each other to put prices on our goods that are fair and reasonable, and that will permit us to continue the business we have our capital invested in. This action is beyond the province of this association, as we are all of one mind that no infraction of the law shall be permitted. There may be apprehension in some quarters that we are in danger of suffering a serious set-back by the incoming administration, but personally I cannot see the slightest justification for a Democratic Congress reducing the tariff on pottery, for I think of all protected industries it has been demonstrated beyond the possibility of argument that our industry has only been fairly and reasonably protected, and we are all in position to show that every cent of the tariff on pottery has gone directly to the employe and absolutely nothing retained by the manufacturer. It is therefore difficult to conceive any change in the pottery schedule of the tariff even by a Democratic administration, for it means nothing else than a readjustment of wages to meet whatever reduction is made. We invite the closest scrutiny to our business and all the records to substantiate our representations, and while it may not be necessary to "cross this bridge before we come to it," yet at this season it surely does not seem amiss to clearly and definitely set forth our true condition as regards the effect of a tariff reduction.

No Friction with Employes.

It is surely appreciated by all, that in recent years we have had no friction with our employes, and furthermore, due to the excellent service of our Labor Committee, we are getting more intelligent consideration from the Brotherhood; so it would seem that the day is past, at least in our industry, when we cannot get vexatious labor difficulties adjusted by arbitration in a fair minded and honorable manner. Our association has suffered in the past year in the loss of several prominent members. Closely following the death of our last president came the news of the death of still another former president, the late Charles W. Franzheim. These gentlemen were both high types of American manhood, and we shall sadly miss the benefit of their council and the pleasure of association with them. We also regret the death of Joseph Chetwynd, one of our members, and Walter S. Blakely, an honorary member, well known to all of you..

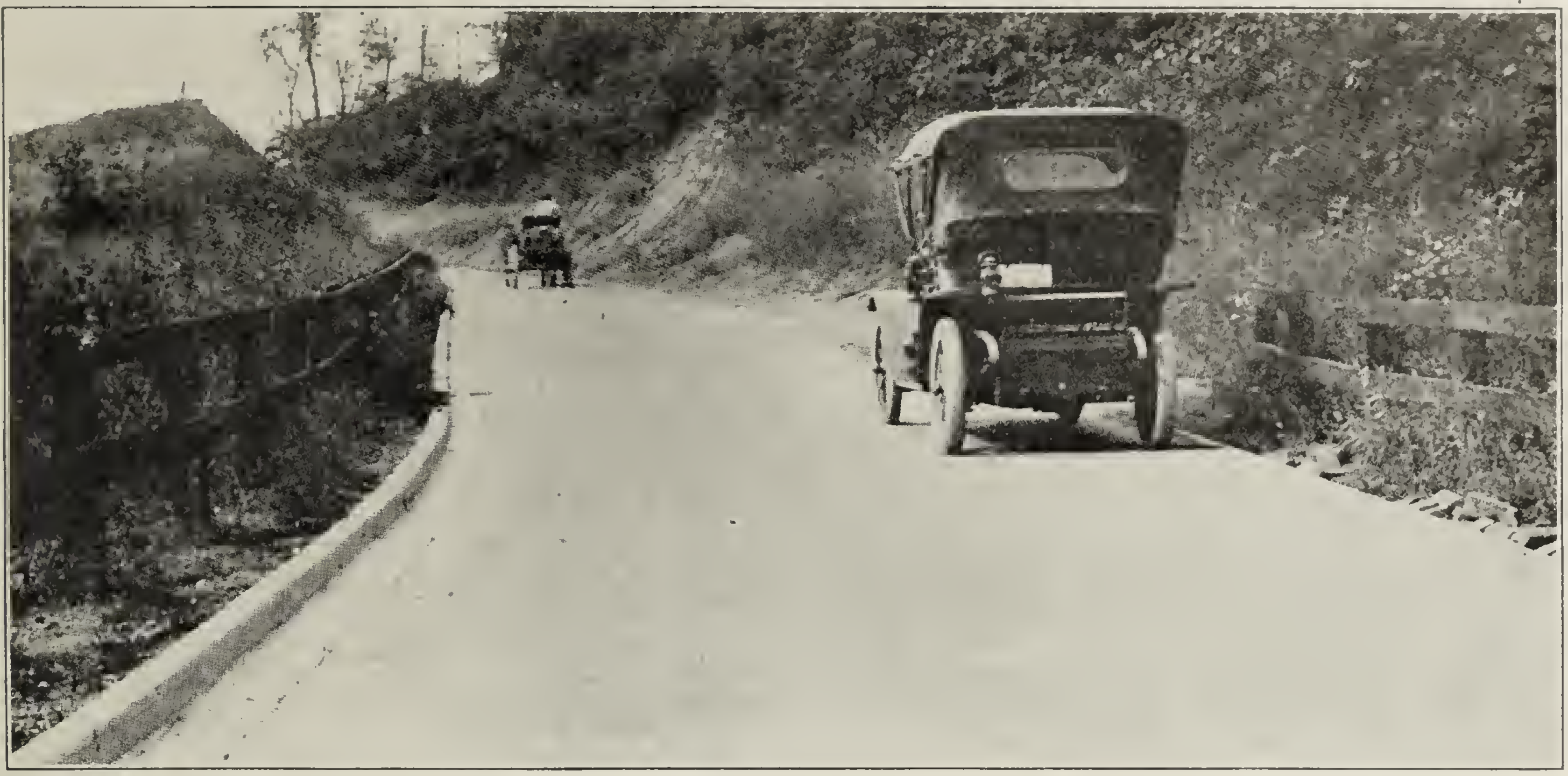
In the absence of accurate information I am only able to state that approximately 40 kilns in the general ware business have gone out of existence during the past year, and from information now available it seems that the thriving town of Newell, W. Va., is to have 30 additional kilns in operation some time next year, which will still leave our productive capacity about the same as it has been during the past two years. However, it is gratifying to note that the manufacturer of china is slowly but surely getting a substantial footing in our country, as is evidenced by the distinct merit and excellence of the product of the Warwick China Co., of Wheeling, W. Va.

General business conditions throughout the country seem very good and it is to be hoped that we may share in the promised activity and prosperity of the next year.

INTERNATIONAL BUILDING EXHIBITION.

An International Building Exhibition will be held in Leipzig, Germany in 1913, to last from May till October. The area to be covered is 400,000 square meters, which is larger than the last world exhibition in Brussels.

COUNTRY HIGHWAY, SHOWING USE OF HILLSIDE PAVERS



NEXT CLAY SHOW IS TO SURPASS LAST YEAR'S

DAILY developments indicate that the Clay Products Exposition of 1913 will far surpass the really wonderful show of 1912. Information received from the offices of the Exposition Company is to the effect that more than twice as much floor space has been sold already for the next show, as was disposed of up to the end of December last year.

Not only this, but the exhibits will be more general and will represent a more complete line of clay products. Particularly in two notable departments, is this true. These departments are bath room equipment and encaustic tiling. These two branches of the industry represent a class of clay products which are of universal interest, not alone to architects and contractors but to the home owner and those interested in a modern dwelling.

The branches of the clay industry producing these products failed to recognize the importance of the 1912 Exposition, but when the wonderful showing was open to the public and after it was seen how many architects, contractors, builders and home owners visited the show with a desire to be posted and with a view of being purchasers, it became apparent that the exposition was worthy of the most hearty support and the fact that 150,000 persons visited the show proved the interest of the general public in the exposition and in every branch of the clay industry.

Few opportunities are ever offered to any manufacturer to show his products to 225,000 persons and the Clay Products Exposition has given an opportunity to a trade sadly needing a stimulating effect, a most wonderfully creditable showing before the world. It is little wonder then that the clay industry, in all its branches, should show a better appreciation of the Clay Show for 1913 than it did for the 1912 exposition. The exposition management has abundantly shown what it can do for the benefit of the industry, and the industry would be sadly indifferent to the efforts and accomplishments of the exposition management if the manufacturers did not get back of the 1913 show with a determination to make it a record breaker.

Eighty of the two hundred available spaces already have been sold to manufacturers representing every prominent branch of the industry except table ware. It is evident, therefore, that the exposition could be opened without further sales of space and an excellent showing be made which would be far more general in scope than the first clay show. It is hoped, however, that all other branches of the clay industry, no matter of how little magnitude, will come into the show and make the exposition really complete.

Every branch of the clay industry can more than double the present volume of business and there is no possible way in which this worthy object can be attained at so small a cost as through the use of the opportunity offered by the Clay Products Exposition. At the last show many of the exhibitors made more than enough sales to repay any trouble or expense to which they were put in making a display. The matter of distance from Chicago was more imaginary than real, because exhibitors from Iowa received orders for material to be sent to New York and Ohio exhibitors secured orders for delivery in almost every remote state as well as the nearer ones.

With a national advertising and promotion campaign being waged by the cypress interests, another by the white pine interests, still another by the cement interests and another by the stucco interests, there is certainly need for the closest harmony between all branches of the clay industry and an enterprise so worthy as the Clay Show, ought to find every clay products manufacturer ready and anxious to boost, especially when the exposition has so thoroughly demonstrated what it can do for the industry and has shown the excellence of its aims and the honesty of its intentions.

There is no time to be lost in arranging for an exhibit both on account of the time necessary to plan and arrange your exhibit and because there may be such a demand for space as to disappoint you in the location or amount of space available.

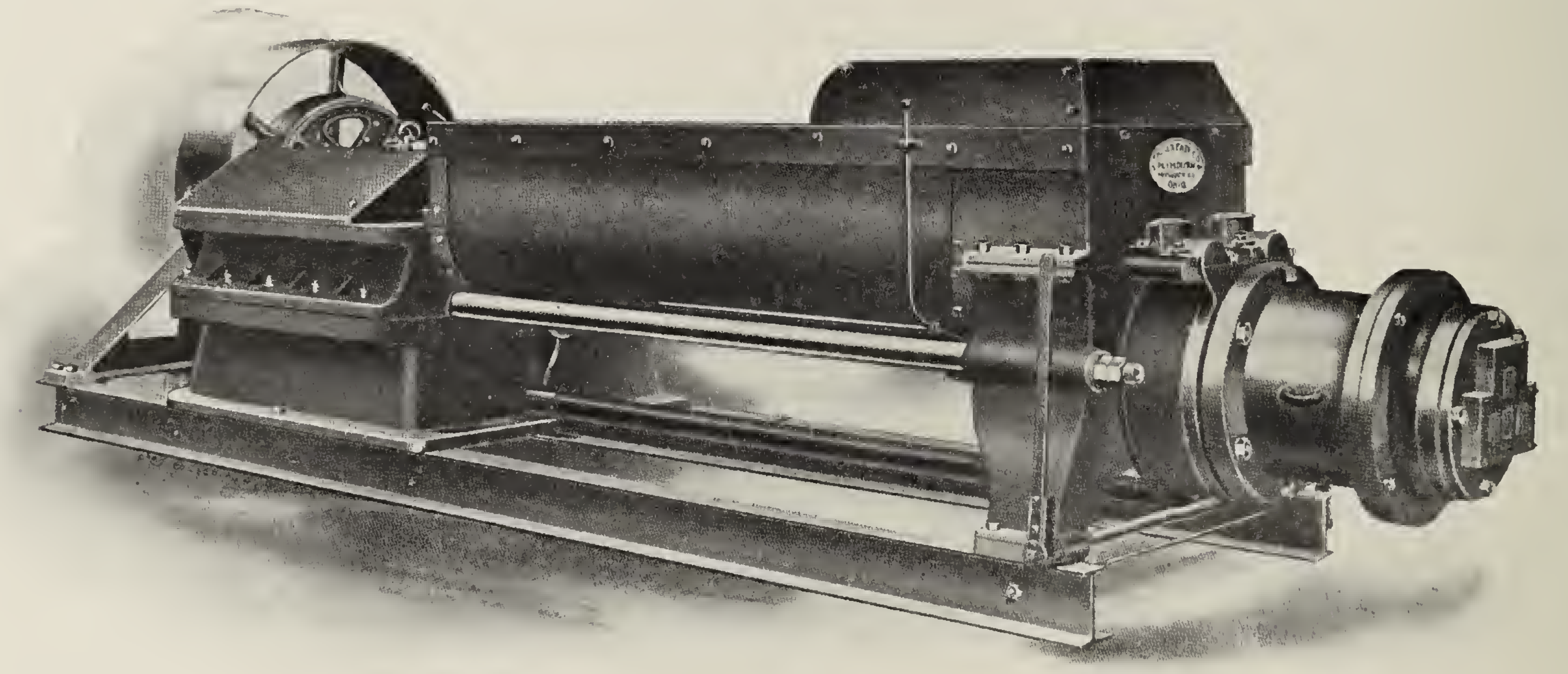
It has been arranged to give ample time for installing all exhibits. The Coliseum will be placed at the disposal of Clay product exhibitors Feb. 19 which will give a full week for installing exhibits and for those who care to work overtime it would be possible to get in 21 days' work in the 7 days. It has cost the Exposition Company a great deal of money to secure this extra time, but it was done in the interest of economy to the exhibitors. The show will be open to the public for ten days, which is twice the exhibiting time of the 1912 show.

SPECIAL MACHINE FOR PRODUCING HOLLOW WARE

THE rapidly increasing demand for hollow clay ware as a building material has caused the machinery men to design and construct a line of special machines more fully adapted to the manufacture of hollow ware, especially in the larger sizes.

The J. D. Fate Co. has recently put out a new machine called "The Special Fioneer Hollow Ware Machine."

It is a large, heavy machine built on the same general lines as their regular "Premier," but with a number of strong improvements made to meet the desires of certain particular customers. This machine is designed especially for the manufacture of hollow ware, such as conduits for electrical purposes and the many and varied fire-proofing shapes that are now so commonly specified by building architects.



Special Premier Hollow Ware Machine, Made by J. D. Fate Co.

A very large degree of the success in making these wares depends upon the size and shape of the augers, nozzles, etc., so this machine is provided with different sets, adapted to making the different sizes. The smaller sized wares are made on one set while on an entirely different set are made sizes as large as 12 and 14 inches in width and height, with ease and ample capacity.

The results of the Fate Co.'s long and varied experience in furnishing machinery for the manufacture of hollow ware have been incorporated into this machine, combined with its well-known double pug shaft and force feed arrangements. Actual tests have shown that the pugging capacity of a 10-ft. double-shaft pug mill is equal to that of a 20-ft. single-shaft mill.

The machine and outboard bearing to support the pulley shaft are mounted on steel beams thus making it entirely self-contained. The gears are of steel and all run in oil being enclosed in a tight case so that no dust or dirt can get to them. If desired, this machine can be furnished with all cut steel gears including the pulley shaft pinion and main gear. All journals are on the outside of the pugging tub, the rear ones being within the gear chamber, so are entirely free from the action of the clay. The length of the machine over all is 22 feet 5 inches; height, 4 feet 8 inches; width of base, 4 feet 8 inches; width over all to outside of pulley, 6 feet 3 inches; width of pugging tub, 32 inches; length of pugging tub, 9 feet 5 inches; main auger shaft, 4⅜ inches in diameter, and 16 feet 6½ inches long; pug shafts, 3½ inches in diameter and 12 feet 10 inches long; driving or pulley shaft, 3⅞ inches in diameter and 8 feet long; main gear wheel 9 inch face; pug gears 7 inch face. Approximate weight, 24,000 pounds. Capacity 75 to 100 tons of hollow ware per 10 hours.

It is furnished with a heavy iron friction clutch pulley, 54 inches in diameter and 16½-inch face with brass bushings, which should run from 140 to 160 revolutions per minute.

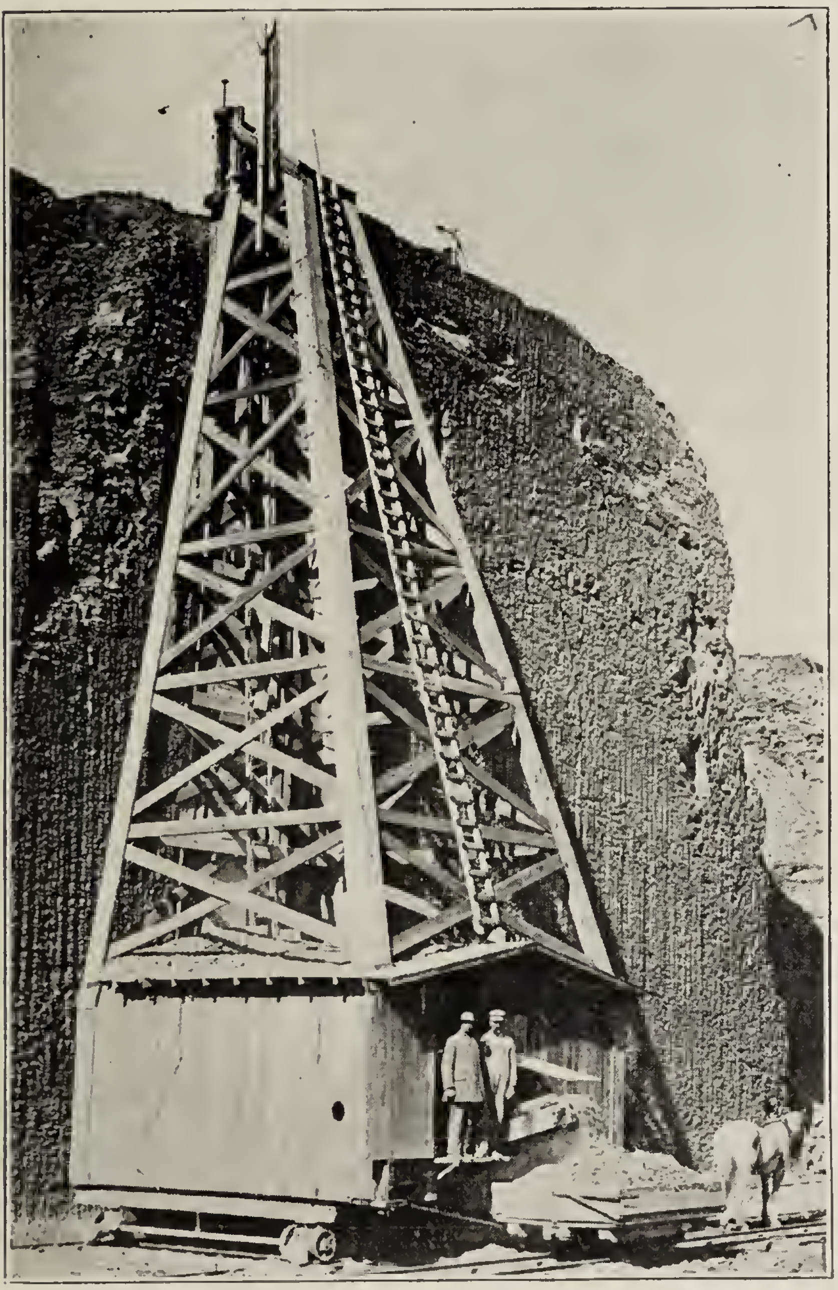
Its manufacturers claim that this machine is the best equipped and most up-to-date machine for the purpose on the market to date.

A NOVEL SHALE PLANER.

Mixes Materials Thoroughly and Lessens by Half the Work of the Dry Pan.

The accompanying illustration shows the ingenious shale planer on excavator which the Indiana Drain Tile Co. has contrived for use in its 50-ft. shale bank. By this means, the material is thoroughly mixed as it is sliced or planed from the top of the bank to the bottom and the company states that it lessens the work of the dry pan one half and has been a great convenience to it in the procuring of the shale, which could not well be cut with a steam shovel.

The company is enjoying a good business, with bright prospects for the future. In addition to its large output of tile it is manufacturing fireproofing in goodly quantities.



"Shale Planer," Used by the Indiana Drain Tile Co., Brooklyn, Indiana.

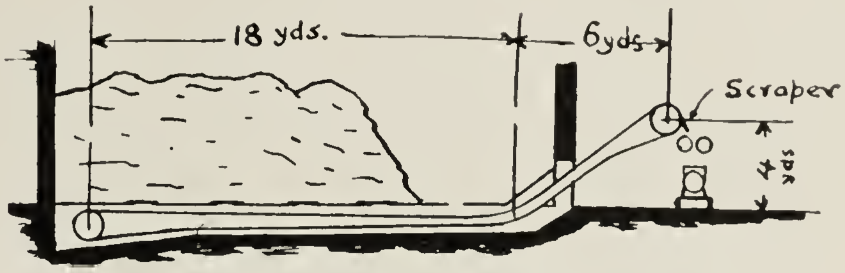
Remember, you are doing good to your neighbor, when you sell him brick for his home and furthermore, you are assisting the nation in its fight to prevent the frightful annual fire loss of $250,000,000.

A SIMPLE CLAY CONVEYOR.

Simply Contrived Device to Take Place of Ordinary Wheel Barrow.

When one or more clays have to be mixed and stored before use, it is advantageous to employ a conveyor in place of the ordinary barrows.

This is especially the case, says a writer in the "British Clay Worker," when a clay is too fat to be worked alone, and before it can be passed through the crushing and mixing plant has to be mixed with sand or a clean clay.



Home-Made Clay Conveyor.

In one English brick works, the arrangement shown in the accompanying illustration was used, a trench being dug and covered with loose planks placed across it. The inventor says: "These planks can be removed as desired, to form openings through which the clay mixture can be thrown or shovelled on to the belt running in the trench below. The conveyor itself consists of a chain some 50 yards in length, running on two octagonal drums. The upper drum is driven by simple gearing. The chain is in two parts united at frequent intervals by iron cross pieces carrying sheets of iron bent into the form of a wide U. The conveyor is very clean in use, and does not produce an increased plasticity in the clay as in the case with belts, when the latter have absorbed rain-water. On the contrary, the clay is completely removed from the plates by means of a scraper placed at the side of the upper pulley. For the dimensions given in the sketch the power required was found to be 3 to 4 horsepower."

THE SKILLFUL BURNER.

Must Like the Work—Must Have Confidence in Himself—Must Not Use Too Much Fuel.

Almost every burner of clay wares, no matter how many years' experience he has had, will say that he still has much to learn in regard to burning different clays under the varying conditions to be found at diverse plants. The enthusiastic burner is constantly studying the problems as they arise and works out the solutions to suit the conditions. A burner of many years' experience says:

"I have been a fireman since I was a lad (I am forty now) so should know something about burning if experience will do it, and I must admit I am still learning and improving. I have, however, met burners of longer experience than myself whom I should term rather coal wasters and draft killers, since they lack that 'peculiar something' which seems to be an essential part of a burner's skill.

"To make a skillful burner, in the first place a man must be in love with his work; secondly, he must have confidence, and think for himself when a change comes over the kiln, which will frequently occur, especially if burning speedily. The chief thing is to keep perfect combustion; this is the real secret of success in brick and tile burning, and where so many burners fail. They kill the fire with kindness; that is, they keep putting on fresh coal before the last is consumed, which chokes the flues, spoils the goods, and keeps the air from the floor of the kiln. The result is a melting hot bottom, with little top heat. The usual practice with many who get a kiln in that condition is to choke the feed-holes midway, to prevent the coal from getting on the floor, and to help to make top heat. I contend that such methods are unnecessary; if the air passage is clear and the combustion right, it is as easy to get the same heat on top as at the bottom, for the air on the floor will lift the fire to the top.

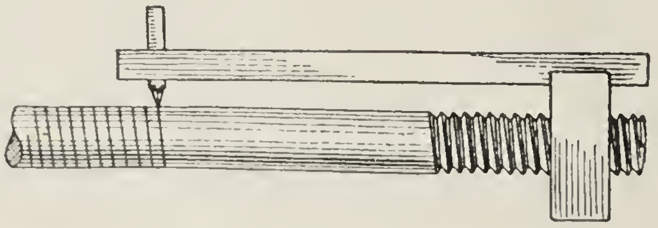
"With regard to low-draft kilns, it is impossible at all times to get good combustion by working on the extreme damper; the only remedy is to fall back on a damper near the red-hot fire, at the same time leaving the extreme damper open, to clear the steam or foul gases. This may seem a waste of heat, which it undoubtedly is; but not such a loss as being held up and having badly burned goods as a result. I should say with such kilns the most satisfactory remedy is induced fan-draft; although I have not had the pleasure of burning a kiln with fan draft, I can readily realize the beneficial results to be obtained by that method. To young burners I would say, be in love with your work, and carefully watch the different conditions of the kiln; and in time satisfactory burning will come quite natural to you."

MAKING THREADS ON A BOLT.

Ingenious Superintendent Finds Ways of Overcoming Difficulties in Shortening Bolts.

A clay-plant superintendent tells how he devised a scheme as follows: "Some bolts had to be shortened about 3 inches in repairing a steam pump located at the clay pit, some distance from a machine shop. The threads varied in size, owing to the bolt sizes, and the length cut off from each bolt would remove the threaded portion, thus making it necessary to cut new threads on the shank of the bolts.

"The only tools at hand were a vise and some small files and the threads were cut in the following manner:



Marker Fastened to Nut.

The nut was placed on the end of the bolt and given a turn on one thread. A piece of board was notched out to fit on the nut and a hole made through the other end by driving in a nail and drawing it out. A pencil was put in the hole and the bolt was rubbed with chalk and then, by turning the nut and wood strip, it marked the thread wanted. The old thread was cut off and a new one filed in with a three-cornered file."

BEST CLAYS FOR SAGGER-MAKING.

Mixture of Refractory Clays Most Satisfactory for Ordinary Purposes.

A subscriber wrote us as follows:

"I want to make some saggers for burning some special articles, along with other ware in an open kiln, but am at a loss as to what is the best clay to use for the purpose."

While no single clay can be considered as perfect for sagger-making, a good fire clay is as near perfection as any single clay. Most manufacturers find a mixture of several clays of a refractory nature, one of them being very plastic and fine, and the others more coarse, and infusible, satisfactory.

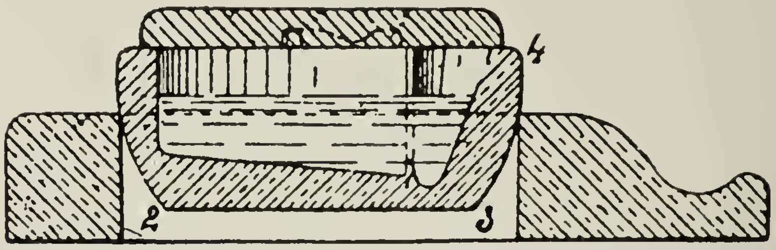
If you only need a few saggers it would probably be best to make them of fire clay, or to build a smaller chamber of brick inside the kiln. If the walls of this chamber are made in two sections, with the brick arranged in different directions, the amount of gases that will leak into it will not be sufficiently large to do any damage. If the temperature of the kiln is not excessive, a 4½-inch wall will be sufficient for the chamber if it is faced outside with clay paste, and glazed inside with a cheap glaze, before being used.

SUGGESTION FOR SOUVENIR.

Appropriate Memento Must Combine Utility With Novelty—Ink-Well Easily Made.

Now that all clay manufacturers are beginning to plan exhibits for the Clay Show, the question of suitable and attractive souvenirs is being discussed pro and con and as an acceptable and appropriate advertising novelty should possess some useful as well as novel features, it is not always an easy matter to "pick up" just the proper thing.

The inkwell, illustrated, fulfills the requirements, the design of which is so simple that it can be made by almost anyone used to handling clay. The novelty of the inkstand consists in the fact that the pot itself is loose in the stand, and is of such a shape that it can be conveniently used when only a small quantity of ink is left.



Clay Ink Well—Suggestion for Clay Show Souvenir.

HOW TO COOL HOT BEARINGS.

Practical Suggestions for Eliminating This Frequent Source of Trouble.

Oftentimes delays are occasioned by newly babbitted bearings running hot. A skilled machinist suggests, as a remedy, that after scraping the box well to make the shaft fit closely in the box, good light oil, mixed with common sulphur, be used. He says that sulphur contains just enough grit to grind the babbitt smooth, without injuring the shaft, but other material having a grit should not be used as it is liable to grind a shoulder on the shaft.

Should the bearing run hot after the sulphur and oil have been used, white lead and water—a very cooling mixture—should be poured into the bearing, while the shaft is running, until it finally cools. Never shut down the machine while the bearing is hot, as the babbitt will contract and stick to the shaft.

THE PAVING BRICK INDUSTRY

CHICAGO-NEW ORLEANS HIGHWAY PLANNED.

Large Sum Already Donated, Making the Success of the Project Assured.

Over $1,000,000 already has been subscribed for the construction of a national highway from Chicago to New Orleans, in the interests of which the Automobile Trade Association of Memphis, Tenn., has started a campaign throughout the south. This means that Chicago will be the cross-roads of the two great transcontinental highways. Secretary O'Hare of the Automobile Trade Association has already been assured the assistance of almost the entire state of Mississippi and immediate action regarding a great mass convention is being taken.

The American Automobile Association has agreed to furnish the Memphis association with a car and at least two men to officially represent the national body in the preliminary campaign.

"The south has awakened to the necessity of good roads, and the opening of the Panama canal in 1913 has been the incentive for the great interest which is being manifested in the good roads movement."

Operations will commence at New Orleans, the present plans contemplating a highway via Jackson, Miss., to Memphis, from Memphis to Cairo, and thence to Chicago, meeting the coast to coast highway at Chicago.

The trunk road will be over the highest water mark in the entire country drained by the Mississippi river. This will afford ample protection from future floods. Brick men should at once take steps to interest the promoters in brick paving, than which there is no greater favorite with motorists.

UPKEEP COST OF BRICK PAVEMENT.

Records Show Asphalt Paving Repairs Cost Three Times as Much as Brick.

While figures regarding the costs and up-keep of brick pavements are not easily available, data gathered by the Department of Public Works at Rochester, N. Y., is significant of conditions.

In January, 1900, there was something over six miles of brick pavement in Rochester. By January 1, 1906, this had been increased to over eighteen miles. In the year 1905 to 1906, 12,584.79 square yards of brick pavement were laid at an average cost of $1.89 per square yard. In the year 1901-1902 the expense of upkeep for asphalt pavements was $20,134.25, for brick pavements, $829.83. Upkeep of brick pavements cost the city by years as follows:

1901-1902	9 Streets	$829.83
1902-1903	5 Streets	$413.58
1904-1905	4 Streets	$114.48
1905-1906	7 Streets	$223.07

Some of Rochester's streets which are paved with brick are Ambrose, Andrews, Dartmouth, Fulton avenue, Granger place, Oxford, South Goodman, Upton park and Spencer. On the desultory figures, procurable, the showing of brick pavements is excellent.

BRICK CHEAPEST IN THE END.

Official Publication of N. Y. Automobile Association Favors Brick for Country Roads.

Rapid strides are being made in the state of New York in highway construction, the Legislature having passed a $50,000,000 bond issue for highway improvement, as a result of which 1,800 miles of country roads have been improved during the past season. Through the efforts of the automobile association of that state a logical system of connecting up the main roads throughout the state was worked out.

"Motordom," the official publication of the N. Y. Automobile Association, in discussing the selection of the proper road surfacing, had the following to say: "It has been found that the hitherto satisfactory types of construction will not stand up under the automobile traffic; the old macadam highways go to pieces. Even abroad, the far-famed old Roman roads have proved unsatisfactory. The wonderfully built roadbeds are there, it is true, but the surface stone has crumbled and become uneven. and the swiftly moving cars raise in clouds the ever hateful dust.

"The New York Highway Commission has a hard nut to crack when it comes to the selection of proper types of construction. A number of miles of brick have been used throughout the state this season. The state is limited, however, in the building of this type as the appropriation for each road limits the amount of money to be spent on the designated number of miles. Consequently with the average cost of a brick pavement, sixteen feet in width, being about $22,000 per mile, that portion of the highway so built is favored at the expense of the rest of the road, the residents along the road of cheaper construction complain and the Highway Commission gets the blame.

"The life of a brick pavement as it is now built on a concrete base with a sand cushion is not positively known, for this method has not been in use long enough for the authorities to base estimates. Engineers maintain, however, that it will stand for from thirty to forty years under the present severe traffic conditions without an appreciable item of repair. In this case it will be far cheaper in the long run to use this type rather than those ranging from $5,000 to $15,000 per mile in cost, which statistics show cost nearly $1,000 per mile a year to maintain. The cheaper the primary cost, of course, the greater the maintenance item."

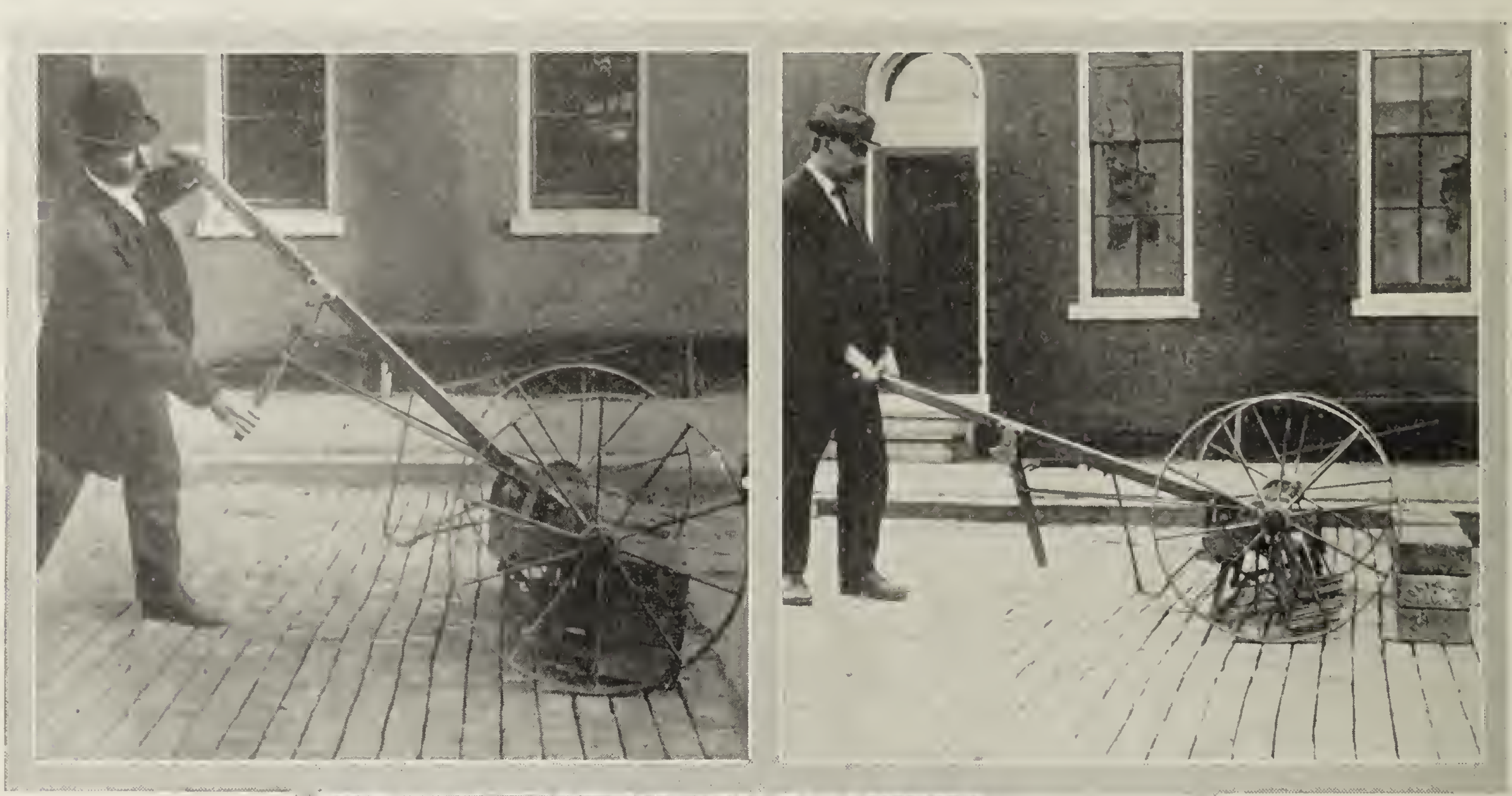
With the ever-increasing use of the automobile, road builders must inevitably come to realize that brick is the only dust-proof road surfacing and the only type which is proof against the tremendous wear and tear of the automobile traffic.

NEW PAVING BRICK CART.

Expense of Handling Paving Brick Greatly Reduced by Simply Operated Device.

There has just been put on the market this fall, a device for carrying brick or block to the setters, which is showing very decided advantages in handling paving brick. By

PAVING BRICK CART LESSENS LABOR AND EXPENSE



Showing How the Use of the Sterling Paving Brick Cart Reduces Labor Cost in Laying Brick Pavement.

its use, it is claimed, a saving of from one-third to one-half the usual cost of transferring the brick to the setters is effected, besides eliminating the loss from chipped or broken brick.

This cart, known as the Sterling cart, made by the Sterling Pattern Works, Sterling, Ill., has been used by a number of contractors, all of whom give a good account of it. It consists of two iron wheels, 30 inches in diameter, with 2½-inch tires. From the axle are suspended one or two racks, consisting of a series of iron straps bent at a right angle to form the bottom of the carrier. The position of the racks is controlled by a lever attached to the cart-handle, by means of which the bricks are delivered where wanted. The carts are most handily loaded by means of brick tongs. The wheels have roller bearings. The whole cart weighs about 200 pounds.

Two styles of carts are made, each carrying 36 brick or 30 block. The No. 2 is designed to place the brick in two piles, each six brick wide and three high. This is to accommodate a two-handed system of setting. Cart No. 1 leaves a solid pile, 10 blocks long by 3 high.

For a wide or moderately wide street the use of four carts is suggested, two for each side of the wagon delivering the brick on the street. There should be two men loading and one man wheeling with each cart, one cart being loaded while the wheeler is placing the other. On a narrow street, three carts will answer with a man for a wheeler for both sides.

PAVING NEWS.

All records of the C. P. Mayer Brick Co. were broken at its Bridgeville, Pa., plant a few weeks ago when the company shipped 300,000 paving blocks from its yards and the company states that this record would have been exceeded had it been possible to secure enough "empties." Business with the Mayer Company is of the best, and like many other brick manufacturers, it has enough business on its books to insure continuous operation.

Fernandina, Fla., will receive bids until Dec. 18, for material for 11,000 sq. yds. of brick pavement.

The Foster Paving Co., of Bradford, Pa., which recently took possession of the Melvin & Peterson brick plant of that city, has installed machinery for the manufacture of paving block and is now building an additional kiln. The company has enough orders on its books to keep the plant in operation for some time.

New Additions to Dunn Forces.

The Dunn Wire-Cut-Lug Brick Co., Conneaut, O., recently closed contracts with the Murphyboro Paving Brick Co., Murphyboro, Ill., The Peebles Paving Brick Co., Portsmouth, O. and the Binghampton Paving Brick Co., Bradford, Pa., for licenses to manufacture brick by the well known Dunn process. The number of adherents to this system of making paving brick is growing steadily, which is the surest proof of its success.

DRAIN TILE & DRAINAGE

DRAIN TILE INVESTIGATIONS IN IOWA.

(Continued from Page 416)

six inches diameter under fills varying from one foot to seventeen feet in depth have been made, and the effect of vertical and sloping sides on the pressure, the effect of different degrees of saturation of the filling material, and the effect of superimposed loads for several different depths of filling have been investigated.

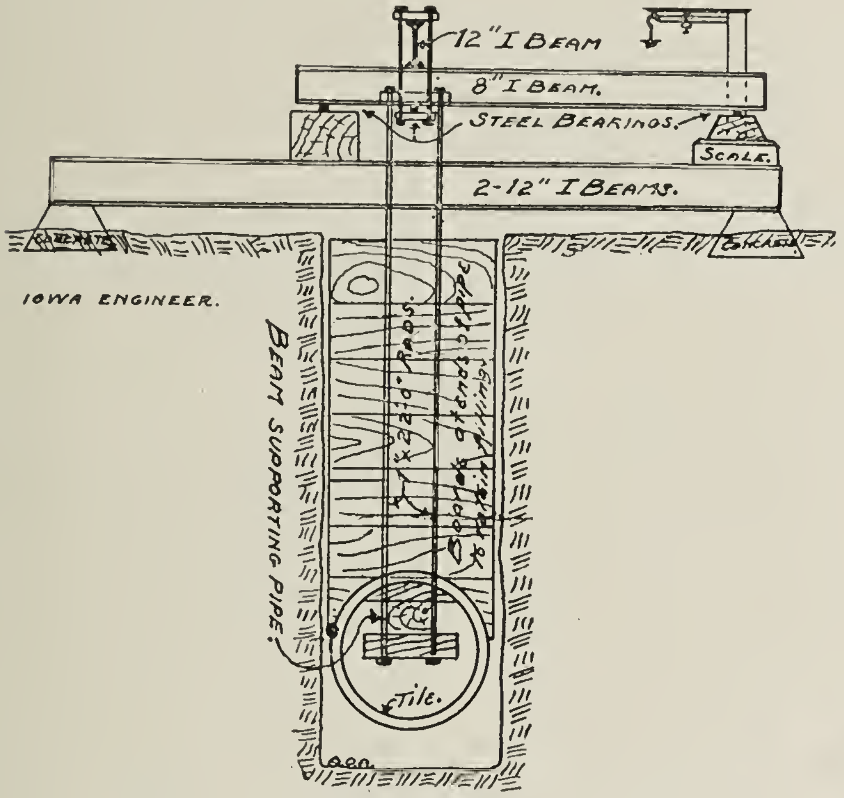


Fig. 4. Showing Method of Testing Pipe.

The investigation of the problems relating to pipe and tile is but a part of the work being done by the experiment station, and represents the effort of but one of the six sections of its organization. The other branches are studying problems peculiar to their own line of work. The results of these investigations are published as bulletins as fast as the work is completed, and these may be secured upon application to the Director of the Station, Agricultural College, Ames, Ia.

A large capacity clay tile plant is now being constructed at Ft. Dodge, by the Vincents. Its builders are not limiting expenditure nor sparing time in their determination to make this plant modern in every respect. Engineering skill worked out the basic questions before work was started. The shale field was prospected and examined and the best mixtures of strata selected, before the plan of working the deposit was determined upon. The clay handling equipment was designed to handle the shale to the storage bins with a minimum expenditure of labor and power. The principles of real economy, only obtainable by the careful expenditure of capital in large amounts to meet carefully studied out questions of economy of construction and operation, have applied from the first.

ILLINOIS TILE TO BE SHIPPED TO CANADA.

Exhibit of "Waco" Tile at Clay Show Results in Big Canadian Order.

The Woodland Clay Co., Woodland, Ill., has received notice that its famous "Wyco" drain tile were selected in connection with a large contract for tile to be delivered at points in Saskatchewan, Canada. This order was secured in competition with prominent manufacturers and is pretty conclusive evidence that Iroquois county, Illinois, is permanently "on the map" among users of drain tile.

The Canadian purchasers were attracted by the exhibit of "Wyco" tile at the great International Clay Products Exhibition at the Coliseum in Chicago last March, and after thorough investigation placed their order with the Woodland Company.

This high tribute to the quality of the Woodland tile will be better understood when it is known that on the four-inch tile the freight alone amounts to $16 per thousand tile, and that the Canadian duty amounts to 33 per cent of the value of the tile. The engineers for the purchasers, however, decided that the advantage offered by "Wyco" tile in the way of permanence and efficiency were well worth the added cost. Shipment on this contract will be commenced immediately.

The above company partially completed its new plant and placed it in operation in June, 1911. Before the plant had been in operation a year orders were being turned down at the rate of about fifty cars per week and for several months this year the plant was 60 and 75 cars behind on shipments. The fame of "Wyco" quality spread rapidly. The company's markets extend into Iowa, Missouri, Minnesota, Wisconsin, Northern Michi-

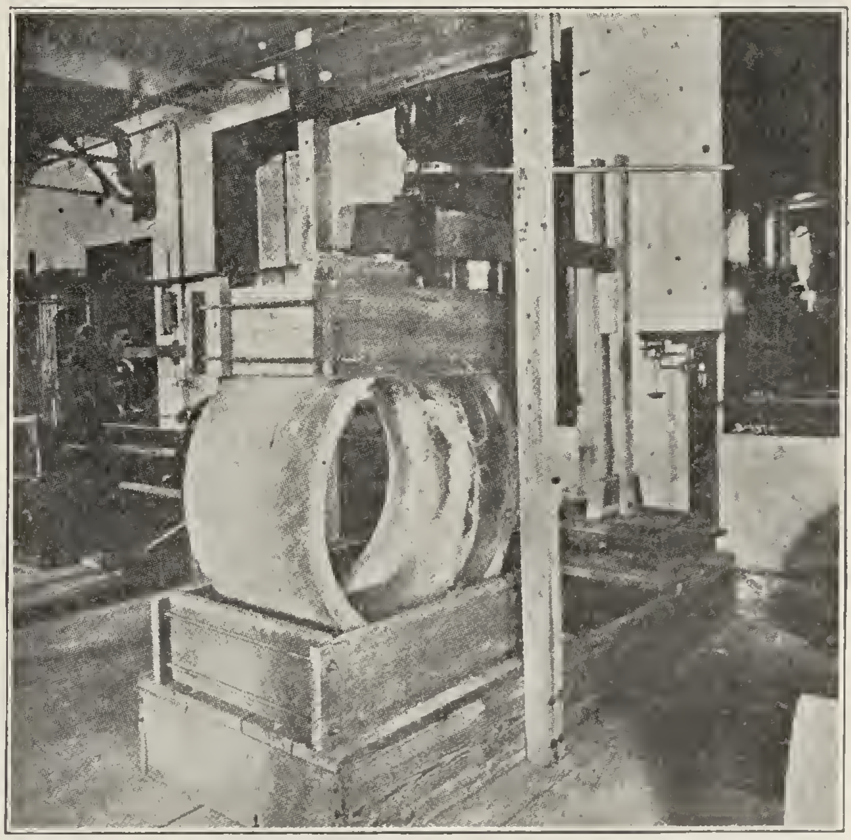


Fig. 3. The Ames Senior Machine, Testing Immense Sewer Pipe.

gan and surrounding states and among its last orders is one for a shipment two thousand miles into Canada.

The company has recently increased its capital stock to $100,000, and the capacity of the plant will be increased considerably.

OHIO TILE AND CLAY WORKERS TO MEET.

Interesting Program Planned—Large Attendance Expected—Dec. 10-11, Columbus, O.

Announcement was made in a former issue of the efforts to revive the old Ohio state clay workers' organization, and we are pleased to be able to state that the organization has been perfected under the title of the Ohio Tile and Clay Workers' Association and it bids fair to outdo the old association in enthusiasm and vigor.

The executive committee and officers have planned a splendid program for the first meeting, which is to be held in Lord's Hall at the Ohio State University, Columbus, O., on the 10th and 11th of December, where ample room with blackboards for illustrating the various papers will be provided.

The program, which covers many important phases of clay product manufacture, follows:

Dec. 10th, 9:30 A. M.

Opening of Meeting and Address, J. D. Rumsey, President.

Address of Welcome, W. O. Thompson, President, O. S. U.

Appointment of Committee on Nomination.

Paper, Designing of Tile Factory, C. B. Harrop, Columbus, O.

Paper, Preparing and Mixing of Clay, Eilis Lovejoy, Columbus, O.

Intermission until 1:30 p. m. Lunch at Ohio Union.

1:30 to 3:00, Inspection of Laboratories of O. S. U.

Paper, Practical Drying of Clay Products, I. M. Justice, Dayton, O.

Paper, Factory Cost, James L. Childs, Findlay, O.

Report of Treasurer.

December 11th, 9:30 A. M.

Report of Committee on Nomination and Election.

Paper, Drafts, W. D. Richardson, Shawnee, O.

Paper, Practical Farm Drainage, T. A. Randall, Indianapolis, Ind.

Paper, Use of Hollow Clay Ware as Building Material, W. C. Denison, Cleveland, O.

Intermissoin until 1:30 p. m. Lunch at Ohio Union.

1:30 to 3:00 p. m. Visit to Museums of O. S. U.

Lecture, Standardization of Drain Tile Tests, Prof. Edward Orton, Columbus, O.

Lecture, Relative Value of Fuels, Prof. E. E. Sommermeier, Columbus, O.

Preparations have been made for taking care of a big crowd and every indication points to an unusually enthusiastic and interesting meeting. Informal discussions, which are always of value, will follow the reading of the various papers.

C. G. ELLIOTT EXONERATED.

Investigations Prove Charges Unfounded—Opens Drainage Engineering Office.

Our readers, who have read with interest the many valuable articles on drainage by C. G. Elliott, presented in this journal from time to time, will, we are sure, be pleased to know that the charges preferred against him by the Department of Agriculture in connection with the drainage of Florida lands, were found to be unjust and the indictments were dismissed by the Government.

The House Committee on Expenditures in the Department of Agriculture made an investigation of the matter, extending over six months, the records of which covered 1,750 printed pages, and its report filed with Congress censures the Agricultural Department with reference to its treatment of Mr. Elliott.

Mr. Elliott has put in many years of faithful work in building up the Drainage Department and his many friends are pleased to know that he has been vindicated and relieved from the embarrassing position in which he and his branch of the department were placed by the withdrawal from it, by his superiors, of funds to make up a deficiency in another branch. Throughout his trouble Mr. Elliott has had the loyal support of the members of the engineering profession, who are prompt to ostracize those who show traits of dishonor. Mr. Elliott has established offices at 2112 F St., Washington, D. C., where as a consulting drainage engineer he is prepared to give reports and estimates on all kinds of drainage propositions. The fact that he has spent many years in drainage investigations, both in this country and abroad, makes his services of especial value.

CEMENT MEN SCORE ONE IN IOWA.

Induce State University to Engage Lecturer to Boost Cement for Use on the Farm.

As an illustration of the aggressiveness of the cement manufacturers, a clipping sent us by President F. E. Keeler of the Mason City Brick & Tile Co., of Mason City, Ia., is reprinted. The item follows:

> Ames, Ia., Nov. 1.—(Special)—Because of the increasing demand of Iowa farmers for information as to the use of cement in farm building, the extension department of Iowa State College is putting an expert into the field to lecture on this subject. It has made arrangements whereby H. E. Gaden, a man of wide experience, will give the months of December, January and February to educational work in Iowa. He will be available for lectures to any kind of a group of farmers at lecture courses, farmers' institutes or agricultural club meetings. Moreover, he will be available without a dollar of expense to the local institutes or clubs. Mr. Gaden will speak on various subjects, including, "The Selection of Concrete Materials." "Proper Mixtures and Proportions of Concrete," "Concrete on the Modern Farm," "Concrete Farm Buildings," "Concrete Silos."

It may be well to add that the Iowa clay product manufacturers are not asleep by any means, for the drain tile men and the hollow building block makers are alive to their interests and are putting up a great fight in the interests of clay products.

(Courtesy Canadian Clayworker.)

Clay Products Attractively Displayed at the Windsor, Ont., Fair by the Cadwell Sand & Gravel Co.

SEWER PIPE NEWS

AMONG THE SEWER PIPE MANUFACTURERS.

American Company Reports Much Activity At Its Various Plants—Orders Still Coming.

The American Sewer Pipe Co., of Akron, O., with head offices in the Oliver Building, Pittsburg, reports a large volume of business on its books and has at the present time unfilled orders for over 5,000 cars of sewer pipe and other products of its plants. The demand for its new segment block, which material is being used by prominent engineers in the various cities throughout the United States and Canada in the construction of large sewers, is admitted to be of such magnitude that the requirements for the coming season will doubtless necessitate the resumption of operations at four or five of its plants, which have not been in operation for a number of years. Generally speaking, the conditions prevailing in this line of trade at this season of the year are far more satisfactory than for many years past.

It is understood that the American Company recently closed a contract for the furnishing of 800,000 feet of material for additional work which has been authorized for the Baltimore, Md., city disposal plant. All of the plants of the American Company are active, good orders are still on the books, and the general business of the last year has been equal in volume to former boom seasons, if not in advance of those records.

An unofficial report is current that the Walker plant of this company, midway between East Liverpool and Wellsville, O., overlooking the Ohio River, will be placed in operation ere long.

At a cost of $50,000 or more, The Kaul Clay Manufacturing Co., of Toronto, O., has begun the construction of a two-story frame sewer pipe manufacturing building. There will be an auxiliary building, which will occupy a site 60 by 75 feet. The roof will be of an asbestos material, and the building will be equipped with a modern power plant, conveyors and elevators and a large battery of kilns. The stockholders of the company are all residents of the upper Ohio Valley.

Lyon, Iowa, is planning to use 8 to 24-in. clay pipe in the construction of 2½ miles of sewers. Tuscaloosa, Ala., will spend $16,000 on the construction of sewers.

A. H. Stowell, manager of the Boston office for the American Sewer Pipe Co., Akron, Ohio, has been making a trip through the Greater Northwest. The American Company has secured a large contract at Calgary, Alta., for vitrified sewer block, a new product particularly adapted to the construction of sewers of 30 inches or more in diameter.

CALIFORNIA PLANT UNDER CONSTRUCTION.

Strong Demand for Pipe in Coast Region Results in Erection of Additional Works.

Some idea of the immensity of the sewer pipe plant which the Pacific Sewer Pipe Co. of Los Angeles, Cal., is constructing at Los Nietos, Cal., may be gained from the statement that it will be equipped with 28 30-ft. down draft kilns. The company is at present supplying a large part of the sewer pipe used in southern California, and with the new plant will be able to take care of the unusually large demand which is being made on account of recent municipal improvements planned throughout southern California.

This plant will be one of the largest and most modernly equipped sewer pipe plants in the west. The main building will be 660x200 ft. with two press rooms 40x70 ft. and one power plant 45x110 ft. These will be built of clay products exclusively. The kilns are supplied with tall stacks 40 ft. in height, built of common brick lined with fire brick. The machinery will be operated by electricity generated by a Kerr turbine.

The plant is admirably situated, so that all the necessary materials may be procured near at hand, thereby lessening the expense of hauling from a distance. On account of this saving, and the excellent arrangement of the plant from an economical standpoint, the company without doubt will be able to produce pipe for less money in the future. Both natural gas and oil will be used for fuel, both being obtained within easy reach of the plant. Vitrified pipe will be made in sizes varying from 3 to 36 inches in diameter. The Pacific Sewer Pipe Co., in addition to large quantities of sewer pipe, produces clay conduit, which is used extensively throughout the Coast country.

TWELVE MILE VITRIFIED CLAY PIPE LINE.

To Keep to the Grade, it was Necessary to Lay Pipe Above Ground.

There has recently been completed in Southern California one of the longest private vitrified clay pipe lines on the Pacific Coast. A remarkable feature of this line is the fact that it runs for three miles above ground, a condition made necessary in order to keep it to grade as the last three miles must be carried over tide water.

In the marshy section the pipe is laid on vitrified clay piers filled with concrete. The total length of the line is twelve miles and the pipe has a circumference of twenty-four inches. The accompanying illustration shows part of the line built above ground. The line is intended to carry off all waste from the Southern California Beet

Vitrified Clay Pipe, Which for Three Miles Runs Above Ground.

Sugar plant near Santa Ana, the outlet being the Pacific Ocean at Huntington Beach. About every one thousand feet a box with gates has been built with the idea of eventually diverting the drainage for irrigating purposes to the adjoining beet sugar fields which are owned by private parties.

When this pipe line leaves the factory it is some six or seven feet under ground and when it has reached its terminus, it is above ground level. The pipe were manufactured by the Pacific Sewer Pipe Co., of Los Angeles.

PUTTING EFFICIENCY INTO SELLING END

(Continued from Page 422)

selling end, and that years of service scored heaviest where long tenure of office was used in the creation of new business.

Hard to Teach Old Dog New Tricks.

It is hard to put a glossy coat on an old nag. So it is a delicate matter to inform an employee that his personal attire is not in accordance with modern commercial standards. The employer, no matter how brusque he may be, hates to pose as the arbitor of personal attire and consequently does one of three things in such an emergency; he either discharges the individual in question; he demotes him and puts an up-to-date man in his place, or he says nothing and stands the loss of pride and efficiency.

That line at the bottom of his illustrated advertisement reading:

"Let a Deco Man call at your Home some Evening," was responsible for all this worriment about haberdashery and personal progressivism in salesmen. The man for such a job as that must breathe the very air of "Success" and create for himself in the office, or in the home of a prospective customer or in the studio of an architect or on the job with the contracting builder, an atmosphere laden with the vivid impression that "Nothing Succeeds like Success." He must be a man of culture, versatile, of good address and fine personal appearance, yet one who would not carry his role to the other extreme and border on the "promoter" or the mercenary bragger who frequently parades under the name of Salesman. The man for that job must be cut for the caste of counsellor, the doctor who would remedy the structural ills of the prospective house.

But where could he find such a salesman? Such salesmen are born; not made. He knew such a fellow who sold parquet flooring down in Philadelphia. He was a high-priced man, but worth it. Billie went him $2,000 a year better and got him.

Charlie was willing to throw up the sponge at that "rash, crazy expenditure," and the older members of the salesforce got sore and laid down on the job for a time. But at the end of five years, Terry Riordan, had not only written more business than all the other salesmen combined, but had clipped some big contracts from the E. N. Terprise concern.

Installs Electric Truck.

Billie long since had turned out all the old antiquated machinery at the yards and put in new. He had opened up new yards nearer Still Haven than those of E. N. Terprise and he carted his brick by electric truck and had his own isolated plant for charging his batteries. When the brick deliveries were slack, coal and wood were delivered and his drivers competed for an extra dollar a week for the greatest number of building alterations under way, they reported from their tours about the city and county. As these reports came in, Riordan would drop around to see the owner at night at his home and "Deco" brick nine times out of ten got into the job.

Every time the papers told of a man winning a lawsuit, or inheriting money from some relative, or receiving a promotion to higher responsibility, that fellow got some of the "Deco" illustrated literature with cost of homes all figured out for him. This was followed up by other literature showing the application of Deco brick in the home and then came Riordan, and Riordan, as a rule, finally copped the business.

Down at the office McManus and Bowles, Morgan, Evans and Timmins, were plugging away on their old established trade. Billie's new fangled notions came to be great simplifiers, and one by one the "old fellows" came to the office with more and more of the neatness of Riordan about them, although this may, perhaps, have been inspired by a feeling that they did not want their friends to think that Riordan was the only high priced man on the staff and that the old fellows earned only mediocre salaries.

As soon as Billie saw that his ideas were taking, and especially that the old members of the selling force were coming around to the modern ways of doing business, he slipped an extra bill of fair denomination into their envelopes as a permanent mark of appreciation and encouragement and inside of six months the slouches were transformed into trim, aggressive, alert salesmen and the volume of business they brought in increased proportionately.

* * *

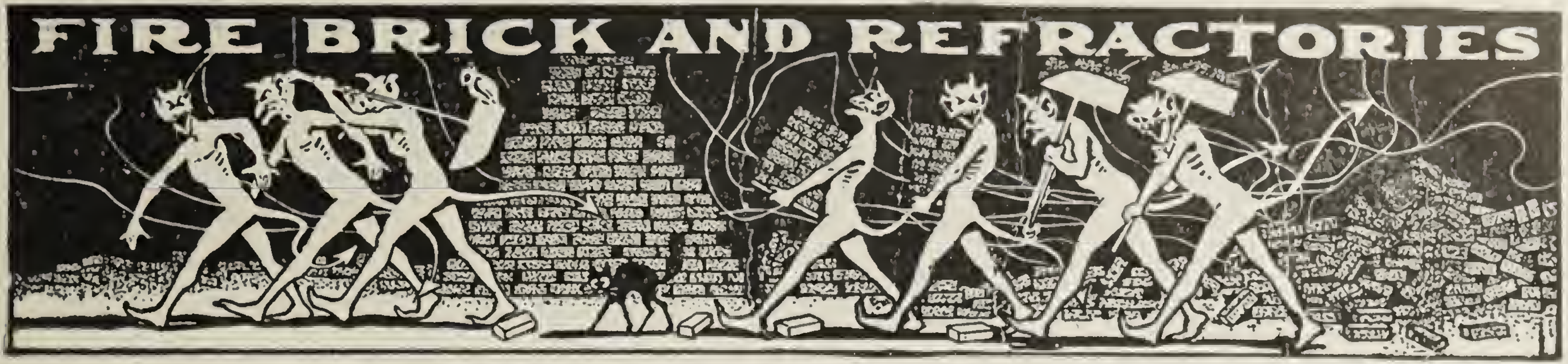
E. N. Terprise called Billie up one day after the Deco Brick & Supply Co. had been in existence about ten years and suggested that they go to dinner together, down at the Builders' Club, to which they both belonged.

Competitors Form Combination.

Over the demi-tasse, E. N. leaned back in his chair, puffed several big clouds of Havana smoke toward the cupids on the ceiling, playing tag around the chandelier, and said:

"Deadun, why can't you and I get together. We ought to control every brick distributing yard in the county. If the chain store idea works in the retail trade, why cannot it be made to work in the building material line, where buying in bulk and packing ourselves can be made to turn us in big profits. We've got the sales forces, we've got the credit necessary for the extension and we both have lands enough on which, through a subsidiary company we can do our own developing. Are you on?"

That was how the great Building Service Corporation came into existence. It applied its efficiency system in a large scale where heretofore it had been applied only in a small way. E. N. Terprise was the president, with Billie Deadun, secretary and treasurer. Charlie Deadun was vice president and Terry Riordan, general manager. As for Morgan, Timmins, Evans, Bowles and Mac, they are all district managers with a staff of young salesmen of the Riordan type applying the principles of efficiency an indefinite number of hours out of every twenty-four and the stockholders, of which old Ezra Deadun is the heaviest outside of the officers, believe that new fangled notions, properly applied, produce healthy dividends.



SETTLING AND FILTERING OF FIRE CLAYS.*

By George E. Thomas, St. Louis, Mo.

The fire clay mined by the Highlands Fire Clay Co., when exposed to weathering, seems to be greatly benefited by exposure for a long period of time; and it has been our experience that there is a certain standard of time required to obtain certain results, after which time no further benefit is noticeable in the process of settling and filtering.

The clay as mined, is a hard rock-like mass and weathering reduces it to an easily crumbled powder. Nevertheless, a mere disintegration, such as occurs at the surface of the weathering piles is not sufficient.

The clay freshly mined and exposed to weathering for a period of two years and over, appears to go through a change that puts it into such a state that, when mixed with water to a clay slip, settling of the clay begins as soon as the slip is placed in the setting tank, the water separating on top being as clear as if filtered. It has been noted that in a six foot depth of slip a separation of clear water of twenty-four to thirty-six inches has taken place in several hours, leaving the clay a thick heavy slip below; and as this clear water is drawn off, the clay continues to settle until it is very heavy and contains very little water.

The Weathering Process

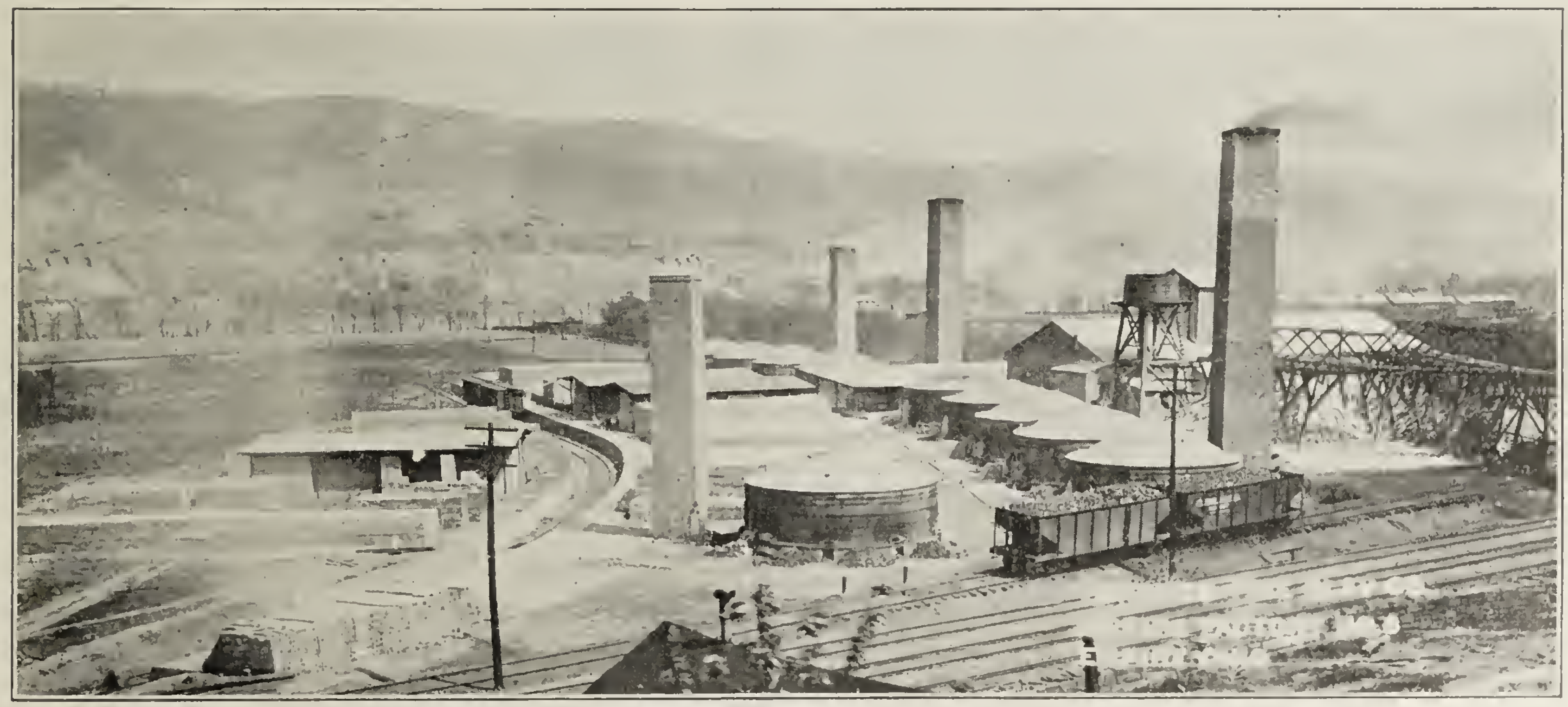
Whereas in the same clay when exposed to weathering for a shorter length of time (one-half to one and one-half years) and put through the same process as stated above, a separation of only one-half inch to six inches of water takes place in the settling tubs, and this water does not separate from the clay clear, it being of a cloudy, milky appearance. No further change takes place whatever, whether allowed to settle one day or fourteen days. In the filtering through filter presses water will not separate from the clay easily; and it requires double the time required for the older clay to press out the surplus water, even under the same pressure, and no difference is observed if higher pressure is used. The cakes will not filter solid; they form a thin layer of clay next to the filter cloth and hold a soft, mushy mass of clay in the center, which remains in this state regardless of pressure or time. Also there remains upon the cloth a slimy, sticky clay substance which seems to coat the cloth and make it waterproof, while with the older clay the cloth is left clear and dry when the solid cake of clay is removed.

In the weathering, let it be understood, the clay in both cases is tested under exactly the same conditions, the only difference being the length of time of exposure to the weather.

It has been found with this clay, that after the change has taken place, as in the two-year old clay, no appreciable change or benefit was experienced by ageing the clay up to five years, the filtration and settling of the two-year and five-year clays being alike.

As far as we can learn, there is nothing in the chemical analyses of the two clays which would explain or cause the difference in their working.

Our aim is to learn if possible what change takes place, and the cause, to make such a vast difference in the workings of the two clays and whether or not the same results cannot be obtained by other means than the weathering process.


Where the Toronto Paving Block Are Made—The Toronto Fire Co.'s Plant No. 3—Notice the Well-Planned Arrangement.

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*From Vol. XIV, Transactions of American Ceramic Society.

WORKMEN'S HEALTH PROTECTED.

Rigid Factory Inspection to Insure Better Working Conditions in Potteries.

Possibility exists that within the next few months every sanitary and general ware pottery in the United States will be inspected at regular intervals by "inspectors," appointed jointly by the United States Potters' Association and the National Brotherhood of Operative Potters. The object is to make improvements in the potteries from the suggestions of these "inspectors" that will aid in securing better shop conditions, where possible, for the American pottery workmen.

It has not been decided whether or not these inspectors shall be men of medical training and registered physicians, or whether they shall be professional tried and true pottery workers. The salaries and expenses of these two inspectors will be paid jointly by the two organizations.

The United States Potters' Association is in deep sympathy with such a movement, which was first advanced several years ago at an annual meeting of the National Brotherhood of Operative Potters at Atlantic City, N. J. It was first proposed that a sanitarium for the treatment of pottery workers afflicted with tuberculosis be established, and that a joint fund of $15,000 be maintained for such a purpose. This sum was to be made up of contributions of $5,000 each from the sanitary, general ware and Brotherhood funds. It was learned that this sum would not be sufficient to establish a sanitarium, and the next best effort in the health uplift cause was the hiring of two inspectors, one for the eastern and one for the western territory.

It is said that the potters' organizations are the first in the country to hire inspectors to look after the health of the workmen of the trade. The suggestions of both inspectors, either to workmen or manufacturers, will be considered as binding on both sides, and in this manner it is planned to make every pottery plant in the United States as healthful as possible.

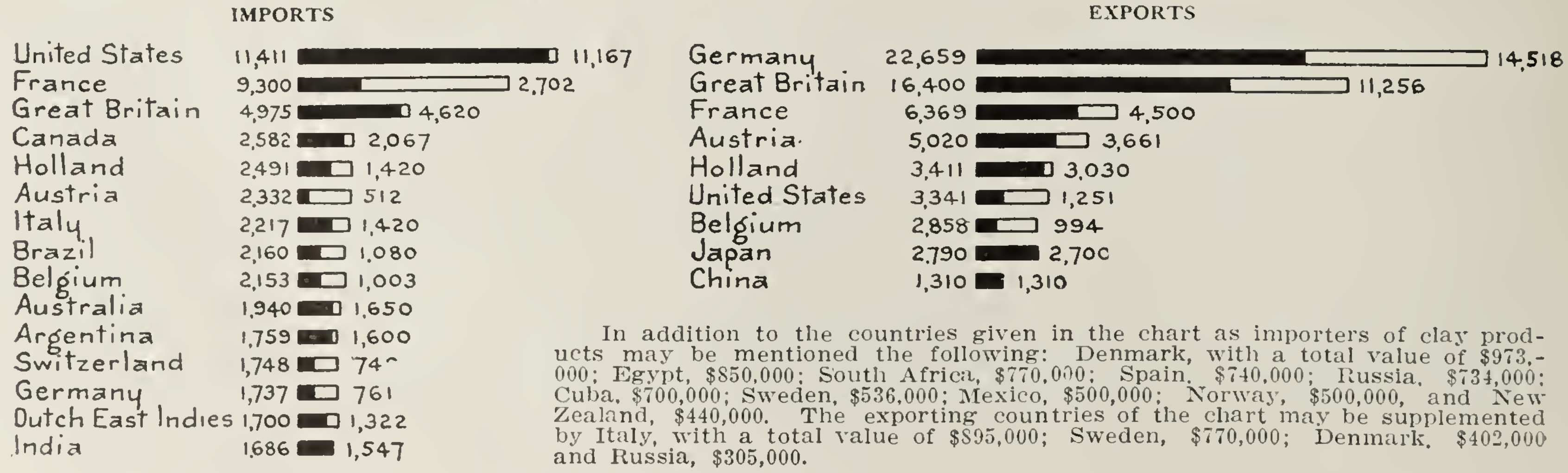
From interviews obtained from a score or more of pottery manufacturers in the United States during the last week, but one thought was uppermost, and that was the taking care of a large volume of business during 1913. Both buyers and manufacturers have faith that the total production of American pottery for the coming fiscal year will prove to be the greatest in the history of the country. This will be made possible by the completion of large additional kiln capacity, which will be put into working force during the coming year. Statements have been made that if investors did not believe the outlook for the pottery industry for 1913 was promising, the additional kilns would not be started. While it may not be generally known, it is reported in some circles that over $1,000,000 will be spent in new kiln and pottery construction during the coming new year.

Following in the wake of other lines of industry, wherein it is the aim to improve the quality of goods manufactured and to obtain additional information concerning manufacturing, insofar as the technique is concerned, there will be formed within the next few months a new organization of pottery superintendents, managers, heads of departments and foremen. It will be the plan of this new organization to meet once a month, hear papers read upon timely topics, to discuss these papers, and to have a question box wherein the organization can be of benefit to the trade in assisting some manager or superintendent or foreman in solving some problem that has been a stumbling block in his particular plant or department.

The American Ceramic Society has done a great amount of work in this direction, but the rank and file of pottery heads of departments are not identified with this association. It is planned to have noted ceramists speak at these monthly meetings from time to time, and their papers published for the general welfare of the pottery worker.

TRADE OF LEADING COUNTRIES IN CLAY PRODUCTS—1911

Values in thousands of dollars—000's omitted



In addition to the countries given in the chart as importers of clay products may be mentioned the following: Denmark, with a total value of $973,000; Egypt, $850,000; South Africa, $770,000; Spain, $740,000; Russia, $734,000; Cuba, $700,000; Sweden, $536,000; Mexico, $500,000; Norway, $500,000, and New Zealand, $440,000. The exporting countries of the chart may be supplemented by Italy, with a total value of $895,000; Sweden, $770,000; Denmark, $402,000 and Russia, $305,000.

SAND LIME DEPARTMENT

THRONGS INTERESTED IN BRICK DISPLAY.

Visitors at Southern Exposition Pleased With Variety of Tift Silica Brick Shown.

The display at the South Georgia Land & Agricultural Exposition, Tifton, Ga., of the Tift Silica Brick & Stone Co., was one of the most attractive shown, because of the unique manner in which the brick were laid in the various panels, in English, Dutch, Flemish and other bonds with every shade of mortar color obtainable. In arranging for this display, the Tift Silica Brick & Stone Co. spared no expense, time or labor in order to produce the desired results. Immense crowds visited the Tift brick booth and several nice orders were booked by the company during the exposition.

A low fence built of white brick laid in black mortar composed the front of the booth. Sand from the immense sand hills in East Albany, Ga., and sand and lime ground to a flour-like powder from which the brick are made were also displayed. On both side walls, dozens of photographs of buildings erected of the company's white brick and testimonial letters from builders, contractors and architects were displayed. Dozens of attractive panels, showing the brick laid in various bonds and colors made up the rear wall of the booth. The floor was covered with beautiful gold-like silica sand. Dozens of "Build With Brick" signs, the company's slogan, were displayed around the booth and throughout the Main Exhibit Building.

The Tift Silica Brick & Stone Co. prides itself on the fine line of brick it manufactures, and on the fact that its product meets the requirements of the most exacting builders. Tift brick are sold throughout Georgia, Florida, Alabama and South Carolina and are in constant demand.

SAND-LIME CONVENTION IN SESSION.

Interesting and Enthusiastic Attendance—Many Interesting Subjects to be Discussed.

The annual convention of the American Association of Manufacturers of Sand-Lime Products is now being held in Toronto, Can. An advance program of the proceedings shows that a most interesting meeting will be held. Among the papers to be submitted will be one on "Results of Testing Sand-Lime Brick," by Warren E. Emly, of the U. S. Bureau of Standards; another, "The Present Condition of the Industry," by Mr. W. H. Crume. The meetings are being held at the King Edward Hotel. On the evening of the first day, December 3, an address of welcome was given by His Worship Mayor Hocken, of Toronto. A banquet was held on that evening. During their visit the members will be entertained by the Toronto Brick Co. and the Harbor Brick Co. Attention is directed to the fact that Toronto to-day is making and selling 150,000 sand-lime brick daily, and that consequently the city is an excellent meeting place.

The Bond Sandstone Brick Co. at Lake Helen, Fla. has been making extensive improvements and additions to its plant.

A PROSPEROUS DAKOTA PLANT.

Hydrated Lime Being Successfully Used at Denbigh Plant—Double Crew Kept Busy.

The Denbigh Pressed Brick Co., of Denbigh, N. D., is doing a prosperous business these days in the manufacture of sand-lime brick, which have become quite popular throughout the Northwest, as well as in other parts of the country, on account of their regularity of shape and evenness of color.

About five years ago the Denbigh Pressed Brick Co. began the manufacture of sand-lime brick, using the division silo system, which resulted in the production of a very fine quality of face brick with a smooth, glossy edge. Since that time the company has changed the system used to some extent and is now using hydrated lime, which it believes produces a better brick at a less cost than by the system formerly in use, although as yet the method is somewhat of an experiment with the company.

The brick are made on a four-mold Berg press and by using a double crew of men, the annual capacity of the plant has been brought up to about six million brick. Other machinery used in the manufacturing process are the lime grinders, mixers, conveyors and a tube mill. The plant is equipped with one 250-h.p. engine, one 140-h.p. and two 150-h.p. boilers and one hardening cylinder. The sand is hauled from the pit to the plant in one-yard dump cars, drawn by a cable.

The Plant of the Denbigh (N. D.) Brick Co.

The loading of cars for shipment is made easy by the fact that a railroad track leads up to the building, so that the brick coming from the hardening cylinder may be loaded directly onto the cars or piled on the yard.

The officers of the company are J. E. Pendroy, president; Dr. A. Carr, vice-president; C. A. Stubbins, treasurer, and H. L. Cartzdafner, secretary.

The Standard Brick & Tile Co. of Colton, Cal., is turning out about 11,000 "good-looking" sand-lime brick at its new plant, which was just recently put into operation. The trade name, "Rokbrik," has been adopted and registered for the company's product.

SQUIRREL CAGE ROTORS

New Type Does Away With Many Difficulties Found in Operation of Former Designs

THE squirrel cage induction motor has long been recognized as the most substantial and reliable of any class of power apparatus. However, there has always been one detail of construction that has caused more or less trouble even in the best of designs.

This detail is the joint between the rotor bars and the end rings. These joints, of which there are two to each bar, have to carry low voltage currents of great volume, especially while starting and consequently anything less than perfection at this point becomes the occasion of extreme local heating, sometimes followed by the ultimate rupture of the joint and perhaps such arcing and burning of the bars and end rings as to necessitate expensive repairs.

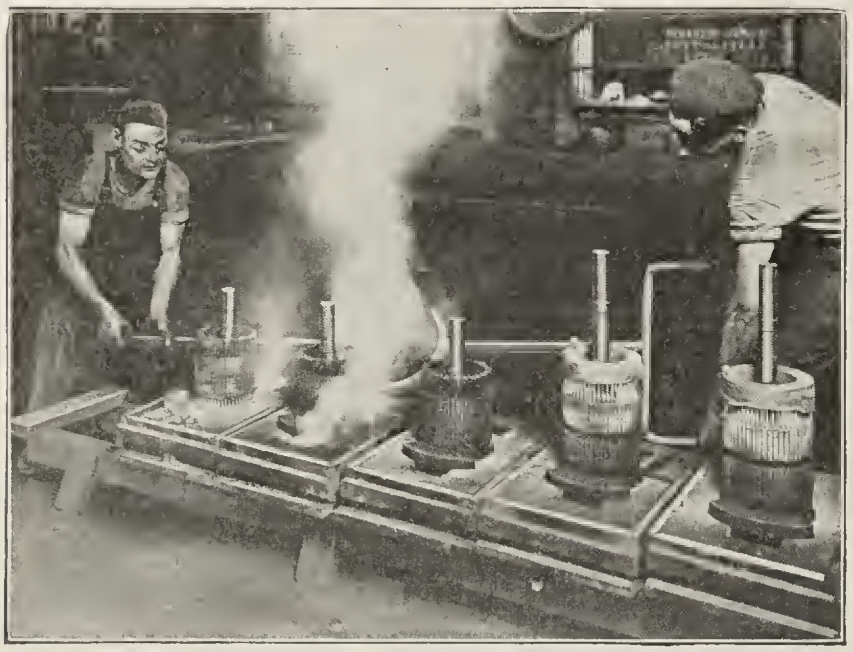


Fig. E2848—Casting Rotor End Rings at Electrical Factory of Fairbanks, Morse & Co.

Various forms of screwed joints, riveted joints and soldered joints have been employed with more or less success, but it has been known by engineers that so long as there was any joint at all between the bars and the rings, there were just so many points of possible failure under operating conditions of extreme severity and there has been no jointed rotor construction which has not proved this by showing more or less failures at this point.

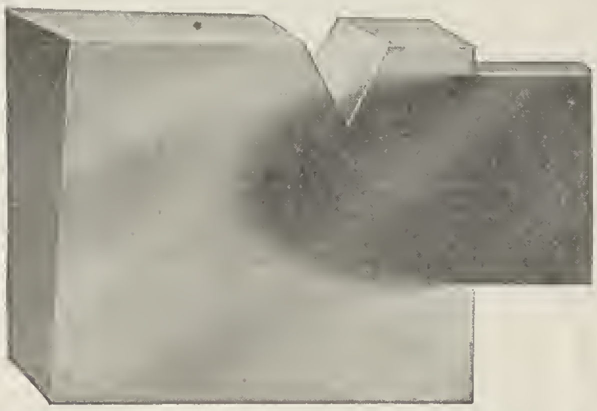


Fig. E2849—Sectional View Showing the Fusion of the Rotor Bar with the End Ring. Also Showing the Patented Groove for Inspecting the Joint.

The solution of the indestructible rotor problem then means a rotor without joints and this has been accomplished in the cast-on end ring construction recently devised by the engineers of Fairbanks Morse & Co., which is shown in the accompanying illustrations.

Figure E2848 shows the operation of casting so clearly that little explanation is required. The rotor bars are assembled in the core and the end rings of either brass or copper are cast around the ends of the bars. The treatment of the bars and the process used being such that a perfect fusion of each and every bar with the metal of the end ring is secured, and a "cage" produced as solid and indestructible as if it were made in one piece. At the left of Fig. E2848 the operation of casting the first ring on a rotor will be clearly seen, and at the right of the picture are two rotors upon which the first ring has been cast and the moulds prepared for casting the second ring. This illustration shows in a striking manner the fact that rotors thus prepared will hardly be subject to injury from any degree of heating that they will ever be subjected to in subsequent service.

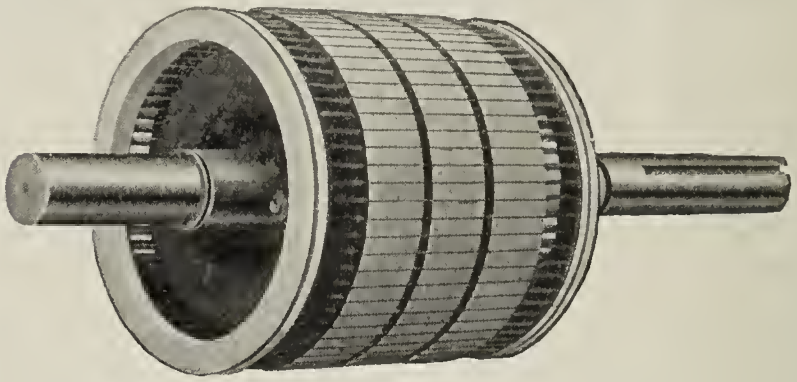


Fig. E2847—Complete Rotor with Cast-On End Rings.

After casting, the rings are finished as shown in Fig. E2847 and a deep groove cut into each ring down to the union of the bars and the rings, so that the integrity of each weld can be inspected. A rotor constructed in this manner may truly be called indestructible and the induction motor, by the invention of this process, has truly been given a longer life and a greater utility than ever before, since what has been the weakest point has now been made as strong as the rest.

WHAT THIS ISSUE OFFERS

Clay Plant Owners Will Find the Advertising Sections Excellent Chance to Plan for Season of 1913

This issue of "Brick and Clay Record," because of the unusually large amount of advertising from the machinery and supplies houses, offers an exceptional opportunity for clay plant owners all through the country to begin figuring on preparations for the 1913 season.

The advertising sections really form a condensed catalog of the most progressive manufacturers and supply houses and there is nothing listed therein but what is the best and most practical in the several lines.

Study the advertising pages carefully and then write for further information on anything cataloged that appeals to you.

This journal is very careful about accepting the advertising from any but reputable firms and maintains a rigid censorship over announcements, investigating any statements that appear exaggerated and likely to mislead our readers or cause imposition. For this reason, no one need hesitate about sending in letters of inquiry to any advertisers whose name appears in these pages.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

Messrs. Horan & Kinney of Kenora, Ont., have purchased 520 acres of coal and clay property near that town. A brick plant will be erected and we understand an entire outfit of brick machinery has been contracted for with the Raymond Co., of Dayton, Ohio.

C. A. DeArment, Petoskey, Mich., recently received an order for 200,000 brick from Espanola, Ont. Owing to the fact that his plant was rushed with other orders, Mr. DeArment was obliged to turn down the Canadian order. Machinery was recently put into the DeArment plant for the manufacture of drain tile.

The Pannebaker-Gordon-Wicks-Burris Union Block in course of construction at Pueblo, Colo., is to be faced with white enamel brick.

The Secretary of the Interior has recently announced the appointment of David White as Chief Geologist of the United States Geologist Survey, to succeed Waldermar Lindgrew, who leaves Washington to become Professor of Geology at the Massachusetts Institute of Technology.

The Brunswick Brick & Tile Co., of Brunswick, Mo., suffered a severe loss from a fire of unknown origin. The plant and machinery were almost totally destroyed; the damage being estimated at about $10,000. The property was not insured.

Plant No. 2 of the Atlantic Terra Cotta Co., Perth Amboy, N. J., was damaged by fire to the extent of $1,000, November 16th.

The Denver, (Colo.) Mantel & Tile Co. is installing tile in a new Catholic Church in Pueblo, Colo., and also tile for the swimming pool in the Y. M. C. A. building.

Matthias Stipp, a brickmaker of Scranton, Pa., has purchased the plant of the Wyoming Valley Brick Co., at Breslau, Pa., for $15,000. Mr. Stipp, who is an experienced brickmaker, will place the plant in operation and will supervise its management in conjunction with his other plant.

Boulder, Colo., is to have a big pottery plant. We understand an eastern pottery concern will establish a plant at that point to make use of the valuable white clay found within a few miles of the city.

The F. L. Hieatt Brick & Tile Co., will build a $12,500 four-story drier building at Santiago, Cal.

Sealed proposals will be received at the Indian Office, Washington, D. C., until December 4 for furnishing materials and labor for the erection of a brick dormitory at the Riverside Indian School, Kiowa Agency, Okla.

The Binghamton Paving Block Co., of Binghamton, N. Y., has let the contract for the building of its new plant, and later on same will be rushed to completion as rapidly as possible.

T. B. Amiss, Jr., who for some time has been southern traveling representative for the Hydraulic Press Brick Co., of Baltimore, is now in charge of the sales office in that city, where he will be glad to greet his old friends and new ones as well.

The plant of the Rio Delta Clay Products Co., manufacturers of brick and tile, at San Benito, Texas, has not been able to keep up with its orders for the past six months, and new machinery is now being installed to care for the heavy demand anticipated the coming spring.

Frank Nicholson has been appointed temporary receiver of the Altoona Vitrified Brick Co., Altoona, Kans. The plant was obliged to suspend operations on account of a shortage in the gas supplies. It is understood the property will be sold soon.

The Geo. Hinchliff Co., 1408 Security Bldg., Chicago, Ill., has secured the contract for the construction of the new postoffice building at Paragould, Ark., and desires to get into communication with manufacturers of face and common brick in the vicinity of Paragould.

The F. H. Goss Brick Co., of Tacoma, Wash., has secured the construction contract for the new Central School building at Tacoma, to be erected at a cost of $1[illegible].

The Pacific Face Brick Co., Portland, Oreg., reports among recent contracts: White brick for the new city hall, Grants Pass, and the five-story hotel to be erected at Roseburg, Oregon, for the Provident Trust Co.; buff brick for the new six-story Hemmel hotel, and gray brick for the new bank building at Albany, Oregon.

The recently organized National Brick Co., of Montreal, Can., has secured clay lands at Cooksville, fourteen miles from Toronto on which a plant will be erected at once. The company is capitalized at $2,000,000, the directorate including J. M. Greenshields of Montreal and Thomas Long of Toronto.

The Gas Machinery Co., Cleveland, O., has made arrangements with the Bonnot Co., of Canton, O., to represent it in the sale of its continuous and down draft kilns in Arizona, Arkansas, Colorado, Kansas, Louisiana, Missouri, Nebraska, Nevada, New Mexico, Oklahoma, Texas and Utah. Roy G. Smith, western representative of the Bonnot Co., 909 New York Life Bldg., Kansas City, Mo., will have charge of the territory, above mentioned.

The plant of the Summitville Tile Co., at Summitville, Ind., was almost completely detroyed by fire Sunday, November 5. The office, one storage shed and the barns were the only buildings that were saved. The loss is estimated at between $50,000 and $60,000, on which there is an insurance of $16,000. The plant will be rebuilt at once.

Kier Bros. & Co., large brick manufacturers of Pittsburgh, Pa., recently purchased a large tract of land at Kittanning, on which there is said to be an exceptionally fine clay deposit.

J. W. Holden, of Scranton, Iowa, has been recently experimenting on a new style corn crib, with a capacity of 10,000 bushels, constructed entirely of hollow brick.

The Alberta Brick Co., Edmonton, Alberta, Can., has its plant fully equipped and ready to turn out fifty thousand brick per day. They are operating with Freese machinery.

The Duncan Gillies Brick Co., at Vegreville, Alberta, is making some new improvements at its plant and will be able to help take care of the demand for brick in that section. They have just purchased a new Justice radiated heat dryer, and new Freese brick machinery.

If the invention just patented by a Grinnell man proves to be a success, brick manufacturers will be enabled to operate smokeless plants and thus eliminate the smoke nuisance.

The Standard Brick Co., of Evansville, Ind., recently received several car loads of face brick, to be used in the construction of porches in the residence districts throughout that city. The popularity of brick porches is rapidly increasing.

A Winnipeg, Can., contractor has placed an order with the Dickinson Pressed Brick Co., of Dickinson, N. Dak., for 400,000 buff face brick. Notwithstanding the many carloads of clay products which have been shipped to Canadian plants during the past year, there is still a shorttage existing there.

The new court house building at Vermillion, S. D., suffered a severe loss when a twenty square foot portion of the concrete roof caved in, carrying with it three of the workmen.

In the future all Michigan convicts, addicted to incendiary habits will be placed at work in a new fireproof brick manufacturing plant now being erected at Jackson, Mich. This new brick plant will have the advantage over the other industries at the prison in that it will be absolutely fireproof and the convict who has any firebug tendencies will be unable to operate successfully in the building.

The Dickinson Fire & Pressed Brick Co., of Dickinson, N. D., is busy filling two brick orders from Canada. One order of 150,000 is to be used for a cathedral and the other of 48,000, for a library building.

The Pere Marquette railroad has denied allegations of discrimination in brick rates made by Detroit brick manufacturers. The company declares that the rate from the Haggert yards, outside of Detroit, 60 cents, was a regular published rate.

Although the brick business in Boston, Mass., has been rather quiet in the way of receiving new orders, the manufacturers say that they are not affected as they have enough orders on hand to keep them running for some time. There has been no change in prices, which remain firm.

The St. Louis Fire Brick & Clay Co., Los Angeles, Calif., is equipping its plants with a Berg four-mould press and is preparing to manufacture by the semi-plastic process, a full line of high grade fire clay products, including a strictly silica brick, in addition to its line of wire cut fire brick. The company also proposes to manufacture a variety of shades in pressed brick and it is now furnishing a large building in Los Angeles with its celebrated cream colored pressed brick.

The company states that trade is active on the coast and prices fairly good, but regrets that in that section of the country there seems to be an inclination to keep down the quality of fire brick rather than to improve it, and that while California fire clays are good, sufficient attention is not given to the technical process of making an A-1 refractory brick.

Excellent progress is being made in the construction of the Superior Brick Co.'s plant at Fort William, Ont. Ninety men are now employed and it is hoped to have the plant in operation by May 1, 1913. The Superior Brick Co. was incorporated quite recently with a capital of $500,000. The president is Mr. A. A. Ayer, of Montreal; the vice-president, Mr. G. F. Stephens, Winnipeg, and the secretary-treasurer, Mr. G. R. Duncan, of Fort William.

The Hebron Fire and Pressed Brick Co., Hebron, N. Dak., is furnishing 7,000,000 brick to be used in the construction of a dormitory building at the Manitoba Agricultural College, St. Vital, Man.

Brick for the Empress Hotel, Vancouver, are being shipped from Coffeyville, Kans., a distance of 3,000 miles.

The plant of the Remmey Sons Company, Philadelphia, said to be the oldest brickmaking plant in the United States, which was recently damaged to the extent of $50,000 by fire and almost completely swept away, will be immediately rebuilt. R. H. Remmey, a member of the firm, said: "We will start the new work at once and our great force of men will not be idle but a short time. Our prospects are exceedingly good and the incoming orders will be filled from our other plant. We have had many fires, but this is the worst in sixteen years."

The plant of the Western Brick Works, at Danville, Ill., was recently inspected by a class from the Washington public school.

The H. W. Johns-Manville Co. has recently opened a new southern warehouse at No. 31½ South Broad St., Atlanta, Ga. The entire building, embracing three floors and a basement, with a total floor area of about 10,000 square feet will be utilized exclusively as a warehouse for J.-M. products. The Atlanta office of the company is in the same building with the local warehouse, which will materially help to minimize the chance of delay in deliveries.

Mrs. William Richards has sold her interests in the brick plant at Clayton, Conn., to Thomas Murray & Co., who owns the south brickyard there, for the sum of $11,000.

The Jos. Soisson Fire Brick Co., Connellsville, Pa.; renewed its order for six subscriptions for various members of the firm and one each for the superintendents of its plants at Moyer, and Layton, Pa. They appreciate a good thing and want others to share it with them.

The Badger Construction Co., of Milwaukee, Wis., was ordered by Commissioner Simmons, to tear up the entire block of concrete foundation on Cleveland avenue, between Eighth and Ninth avenues. The commissioner asserted that upon investigation he discovered the concrete was too soft.

The City Council of Des Moines, Iowa, passed resolutions which orders that the following streets and alleys be paved with brick: Fourth street, Elm to Vine; Vine street, Fourth to Fifth; alleys north and south and east and west in Block 19, Fourth to Fifth street.

The Superior Brick Co., of Fort William, Ill., has been incorporated with a capitalization of $500,000. The erection of their new plant is now well under way. The officers are: A. A. Ayer of Montreal, president; G. F. Stephens, of Winnipeg, vice-president; G. R. Duncan, of Fort William, secretary.

The Valley Brick Co., Charlestown, W. Va., after a season, which in spite of adverse weather conditions has been quite satisfactory, is about to close down for the winter. The company states that prospects in the local market for next year are exceedingly bright and that the increase in its shipments over 1911 is distinctly flattering. The company contemplates an increase in the drying capacity of its plant, before it reopens in the spring.

Orders are coming in in such large volumes that the Chandler Brick Co., of Chandler, Ariz., says that it is compelled to double its present plant capacity in order to handle its orders.

United States Consul, Canada, stationed at Vera Cruz, Mexico, states that owing to the fact that brick is the principal building material throughout the country, machinery for their manufacture should be readily sold, as they are still made there, by the hand method in all cases except in the larger towns.

The dry pressed brick yards at Sandpoint, Idaho, now owned by the Clay Products Co., of Spokane, will be placed in operation under the new management very shortly.

The American plant of the Harbison-Walker Refractories Co., which is located near Lock Haven, Pa., is to be placed in operation ere long, this following several years idleness. About 75 men will be given employment at the start. In order that proper accommodations might be had by the workmen who will be employed here, the company has awarded the contract for the repairing of a number of workmen's houses in the vicinity of the plant. Business conditions with the Harbison-Walker interests are excellent. At the last meeting of the Board of Directors of this company, the usual quarterly dividend of one-half of one per cent on the common stock was paid Dec. 1.

NEW PLANTS AND ADDITIONS.

Frank Davidheiser of Reading, Pa., is contemplating the establishment of a brick plant at Stowe, in addition to his already established plant at Reading.

The plant of the Summitville (Ind.) Tile Co., which suffered a loss by fire of $50,000 on Nov. 5th, is to be rebuilt at once.

The National Terra Cotta Co. of Kansas City, Mo., has been incorporated with a capital of $150,000, to manufacture, buy, sell and deal in terra cotta and all kinds of clay products. The incorporators are: Andrew F. Brooker, E. A. Green, and Richard P. Edwards, all of Kansas City.

It is reported that John A. Barbay, a contractor of Crescent, La., and a number of his associates are making preparations to establish a brick manufacturing plant at Port Arthur, Texas.

The Queen City Brick & Tile Co., Cumberland, Md., plans to increase its plant capacity.

The Kaul Clay Mfg. Co., Toronto, O., is building a new sewer pipe plant to cost $50,000. Bids are now being taken for machinery, power plant included.

The shale brick plant of L. L. Stephenson at Lovick, Ala., was practically destroyed by fire November 13th, entailing a loss of approximately $50,000, on which, we understand, there was no insurance. Mr. Stephenson announces that the plant will be rebuilt at once and the new one will be thoroughly modern in every respect.

The Albany (N. Y.) Clay Products Co., soon to incorporate with a stock of $1,000,000, is erecting a plant near Albany to manufacture hollow brick and fire proofing.

The French Marble & Tile Mfg. Co. has been organized at Houston. Tex., by M. Gabert, James Pakorny and E. L. Gabert, all of Houston.

The Washington Silicate Brick Co., Washington, D. C., is about to double the capacity of its plant at Terra Cotta, D. C.

The Virginia Talc & Soapstone Co. has been incorporated at Fredericksburg, Va., with a capital stock of $150,000, to mine talc, soapstone and other minerals.

The Central New York Brick & Pottery Co. has been incorporated with a capital stock of $500,000 by Waldemar Kaempffert of New York.

The American Volsam Co. of Bangor, Me., E. C. Carll, president, is establishing a plant at Bangor, for the manufacture of art pottery, tiles, etc. A testing laboratory will also be established.

The Brazos Tile & Brick Co. of Rosenberg, Tex., has been incorporated with a capital stock of $50,000 by R. W. Knox, Jeff N. Miller, N. R. Dorrance and others.

The Ragland Brick Co., Ragland, Ala., will build additional kilns.

The Builford Mantel & Tile Co., with a capital stock of $25,000, organized by Austin Smith, Sr., R. S. McClamrock and Mrs. Cora McClamrock of Greensborough, N. C., will conduct a general mantel and tile business.

The McEwing & Thomas Clay Products Co. is a new St. Louis corporation with capital stock $2,000. The incorporators are A. T. Groesbeck, W. G. Thomas, Charles E. McEwing and Charles P. Tilley. The purpose is to manufacture and sell all kinds of clay products.

The Houston-Dayton Brick Co. of Houston, Tex., is erecting a brick plant at Dayton, Tex.

Alhorn & Waller, brickmakers at Morganfield, Ky., will add two down draft kilns at Morganfield and one at Uniontown, Ky., and put in machinery to manufacture larger tile.

The Geo. H. Clippert & Bro. Brick Co., 1920 Michigan Ave., Detroit, is contemplating the use of producer gas for burning brick in up draft kilns, and desires information in the matter.

The statement in a former bulletin that Finley Barrel & Co., 53 W. Jackson Blvd., was interested in developing Canadian clay lands, should have read H. L. Emert, care Finley Barrel Co., above address.

Mr. Leftner of Edmonton, Alta., Can., is contemplating the establishment of a sandlime brick plant.

The Maryland Fire Brick Co. will shortly begin work on the erection of a large plant at Harwood, Md.

The Austin Brick & Lumber Co., manufacturers of hand pressed brick at Pontotoc, Miss., has had such an extraordinary demand for its product that it is planning to increase its plant capacity by adding a dryer.

The county commissioners of Kalamazoo, Mich., have purchased a site at Portage Center, on which they will erect a tile factory to be operated by prisoners from the county jail, the tile to be used in road construction.

Harbison-Walker Refractories Co., of Philipsburg, Pa., has broken ground for an addition to its fire brick plant at Retort, Pa. The building will be brick, 120x80. The foundation contract has been awarded to J. W. King & Son of Keystone Hill. Six new kilns will be built, and modern machinery added, including a molding machine.

The Standard Drain & Pipe Co. of St. Johns, Quebec, Can., is planning to establish works at Moncton, Can., for which purpose $200,000 has been set aside.

The Ontario National Brick Co., of Toronto, Can., is about to be incorporated with a capital stock of $2,000,000. It will erect a brick plant at Cooksville, near Toronto.

A brick and tile works is to be started at Charlton, Ont. The plant is expected to be ready by the spring. The capacity will be 30,000 brick a day in addition to a large tile output.

G. C. Brown, 1301 Main St., Dallas, Tex., will install a mud brick plant and wants addresses of manufacturers of clay machinery.

The Ideal Brick & Tile Co. has been incorporated with a capital of $60,000 to manufacture brick, tiles, etc. The head office is at Brantford, Ont.

The Pee Dee Brick & Tile Co. of Pee Dee, S. C., has been chartered with a capital stock of $25,000. The officers are W. R. Barringer, president; C. P. Perry, vice-president and T. R. Barringer, secretary and treasurer.

The Valley City Brick & Tile Co., organized by S. L. Davidson, A. R. Robertson and C. E. Hickman, all of St. Paul, will erect a plant at Valley City, N. Dak., to manufacture hollow block, brick and drain tile.

The Vandeveer-Stoy Co., with offices at 330 Chronicle Bldg., Houston, Tex., expects to spend $125,000 on its two plants at Rosenberg and Elgin during the next six months.

NEW YORK.

New York, Nov. 25.—There is only a slight improvement noted, in the brick buying movement throughout the metropolitan district. As a matter of fact, the dealers, anticipating a strong building movement, are getting under cover as fast as they can, and consumers, looking for higher prices in the spring are coming forward with their specifications, even on structures which will not be supplied with steel before the first of March.

The real cause of the recent manipulation of the brick market in New York City is the inability of contractors to get building steel. Consequently work has been held up or delayed on more than sixty per cent of the buildings now in course of erection here. Thousands of brick are lying at barges at docks about the city which cannot be unloaded because of the restrictions of the Bureau of Encumbrances against blocking the streets, and vacant lots are too scarce to permit of wholesale stacking as conditions require.

Here is where the manufacturers up the North river are pinched. They have their barges here loaded, but they cannot move them. Consequently they are short of bottoms to ship brick into this market and the close of navigation at best, is only a few weeks off. This makes a very tight market. yet, in spite of these conditions, which have been known to be impending by the dealers themselves for some time, few have stacked.

So serious did the situation become during the middle of this month that Senator John B. Rose, president of the Greater New York Brick Co., sent the following letter to customers under date of Nov. 14:

"We deem it important to notify you that from the present outlook it will be absolutely impossible for this company to take care of the demand for brick during the winter months.

"An analysis of the situation shows that there are engaged in the transportation of brick, between two hundred and three hundred barges or scows. Naturally the barges discharging during the month of December cannot be at the brick yards loading, and it will be possible only to get in the market for the winter supply, in the neighborhood of 150 to 175 cargoes, which is approximately fifty million to 52,500,000 brick. Of the 150 or 175 cargoes, which will be in the market, seventy-five to my knowledge have been ordered by three out of every five building material concerns which are regularly buying brick from this company."

The letter goes on to show the comparative number of barges carried over under cover for the last four years and gives the following interesting statistics:

1908—106 barges or 31,800,000 brick.
1909— 85 barges or 25,000,000 brick.
1910—118 barges or 35,000,000 brick.
1911—105 barges or 31,000,000 brick.
1912—150 to 175 barges or 45,000,000 to 52,000,000 brick.

While the available total for the coming winter as estimated by the Gnybco interests is larger than heretofore, anticipatory orders to the extent of more than half the supply coming into the winter market, is almost unheard of and presages interesting times ahead. To quote further:

"An investigation of the amount of brick required from my knowledge of contracts, which have been reported to me by the various dealers, shows that between the first of December and the first of April, the builders of Greater New York, Newark and vicinity, and of the New Jersey territory adjacent to Manhattan will consume approximately between three hundred and four hundred million brick.

"I also find upon taking stock that there is piled up around the city from seventy-five to one hundred million of brick less than in former years. Where then ,does the building material man expect to get his supply from? We will not be responsible for the shortage which is apparent during the winter months. Dealers must stack up brick, at least in reasonable amounts, if they expect to take care of their winter needs, as we have not the barges and we cannot obtain them to take care of this demand when the river is closed."

Coupled with the conditions as set forth in the foregoing, is the startling announcement that engagements for building construction in the Metropolitan district between November first of this year and January 1, 1914, total $239,000,000, of which the Metropolitan Life Insurance Company has taken $20,000,000 alone and has not yet withdrawn from the market. This means only one thing: an exceptional eastern building year to say the least. It already represents a gain of $15,000,000 over the total building construction value of 1911. Of this total $186,000,000 will be required for Manhattan, Bronx and Brooklyn and $23,000,00 will be required in Queens, while New Jersey building construction will take approximately $30,000,000.

Engagements for building operations are seldom as general nor as heavy in value as those which have characterized the projected building operations of the next year and therein is found the chief cause of wonderment in the apparent hesitancy on the part of brick dealers and distributers to take better care of their trade than they have shown indications of doing up to the present time.

Money interests, really the nerve center of prosperity, are discounting politics and the Tariff bugaboo and are going ahead as though such a thing as Free Trade and other political isms never existed. The demand for more fireproof structures in anticipation of a new building code, and a greater commercial and residential demand for light and air in business and living quarters, is creating a demand for new buildings that is unprecedented. Yet material men handling brick are indifferent about their future supplies despite the fact that there are not any too many brick up the river. They are heedless of the fact that there is a great dearth of carrying bottoms and that structural steel is behind on shipments at the rate of a million tons a month, with shipments in fits and starts not only possible, but probable. The fact that the average investor is clamoring to get into the market with his plans and financial negotiations before a rising market puts his cost of construction up from five to ten per cent means nothing to him. He is the fellow who is going to be caught short on his spring deliveries. He also is the man who will be loudest in his complaint that the eastern brick business is in the hands of a monopoly.

THE COAST.

San Francisco, Nov. 23.—The copious rains which have prevailed on the Coast in the past month have had a deterrent effect on building operations here, but nevertheless the amount of construction work going on is much greater than usual at this season of the year. The building permit valuations for October average about the same as for the month before and show in most cases a creditable increase over October, 1911. General business conditions are healthy and the labor situation remains uniformly peaceful. There is more work for mechanics and unskilled workmen this fall in San Francisco than a year ago and if no rush of labor takes place by reason of false inducements, the rate of nonemployment will not average high this winter. Building activity in the south has taken many workmen from the north and east and there is no shortage of men in that section. The prospects for a very active year in 1913 are bright in the building trades and if the rainy season is not unduly protracted the spring season will open early. The proposed building in connection with the Panama-Pacific Exposition and the civic center alone would insure unusual activity.

The fall season in the brick trade has averaged well in comparison with the past few years and is now in a fully normal condition. Common brick is holding firm at $7.50 per M. and is still selling in considerable quantities. Some few brick plants have been closed down for the winter, and others are preparing to shut down for two or three months, but a large proportion will work more or less regularly all winter, especially those in the south engaged in making pressed brick. In Los Angeles it is reported that the brick manufacturers have about caught up with their orders and it is expected that there will be much less difficulty in the future in taking care of the demand, owing to the improvements installed in many of the plants. In the north, a sufficient stock of brick has been accumulated through the summer to take care of the winter and early spring trade.

The terra cotta market is holding up fairly well, but no extra jobs have been awarded in the past few weeks. Factories are operating steadily, but scarcely at full capacity, at present. All local dealers expect a big demand for architectural terra cotta early in the new year. Glazed terra cotta for exteriors and partition tile will undoubtedly be used more than ever.

Publicity Bureau Securing Results.

The sewer pipe market has naturally fallen off somewhat, lately, on account of the season, but practically all the vitrified clay pipe manufacturers are doing the usual amount of work and are sold up pretty close. For all new sewer improvement work that is now in progress in various Coast communities, the demand for vitrified products is strong owing to the constant educational publicity work carried on by the clay products publicity agents. Frederick C. Davis, manager of the Pacific Clay Products Publicity Bureau, is supplying scientific literature on his specialty to municipal authorities wherever sanitary sewer systems are in contemplation and he states that for the most part such persons have only to learn the merits of vitrified pipe to give it their approval.

The tenth annual state session of the California State Conference of Journeyman Bricklayers was held at San Diego during the week of Nov. 10th. Supervisor Edward L. Nolan and Sidney Hunn, representing the local union, and Thomas Ryan of Oakland attended as delegates from this vicinity.

The Powell Bros. Construction Co. of this city has filed a complaint against the Southern Pacific Railroad asking for reparation in the sum of $185, the amount alleged to be the excessive charge on recent shipments of brick from San Jose and other points to Alameda and Oakland.

Athol McBean, of Gladding, McBean & Co., large brick, tile and terra cotta manufacturers here, has purchased a handsome brick mansion on Washington St., between Spruce and Maple.

To demonstrate the merits of their paving brick, the Denny-Renton Clay & Coal Co. of Seattle, under the superintendence of T. H. Collins, chief engineer for the company, has laid a block of brick pavement on Powell St., between Ellis and O'Farrell in this city. The paving has been down about a month and makes a fine showing. The company makes the claim that such paving will stand hard usage for a period of twenty-five or thirty years without needing replacement.

The citizens of Dinuba, Cal., have voted $40,000 for sewer bonds in connection with proposed sanitary improvements. Vitrified sewer pipe will most probably be specified.

The Steiger Terra Cotta & Pottery Co. has just closed a contract for supplying architectural terra cotta for the mortuary chapel at Holy Cross Cemetery. This company is also furnishing matt glaze and polychrome terra cotta for the Lux school here, and semi-glaze terra cotta for the Levy Real Estate Building on O'Farrell St.

The Los Angeles Pressed Brick Co. has contracts on hand to furnish cream enamel brick for new buildings at Yuma, Ariz., and a large quantity of roof tile for the Arizona trade; also for cream pressed brick for the Los Angeles Investment Co.'s skating rink and for large business blocks in San Diego.

The F. J. Hieatt Brick & Tile Co. of San Diego, is to erect a four-story dryer building on California St. When this and other improvements have been completed the plant will have about ten times its present capacity.

The plant of the San Pedro Brick Co., San Pedro, Cal., has been closed down for the winter. This company made over 2,000,000 brick this season.

The Simons Brick Co. of Los Angeles is installing new machinery which will increase the capacity of the plant to 360,000 brick daily.

The Alverhill Coal & Brick Co. near Elsinore, Cal., is developing new clay deposits and preparing to put in numerous improvements for handling the product.

J. Y. Parker, president of the Long Beach Brick Co., Long Beach, Cal., has published an attractive advertising poster which reads: "Build with Brick" and placarded the town with it. This company is only one of several in the state which are carrying on popular advertising campaigns for brick products.

J. M. McGowan, manager of the Chandler Brick Co. of Chandler, Ariz., has announced that the capacity of his plant is to be doubled immediately in order to meet the big local demand.

DETROIT, MICH.

Detroit, Mich., November 25.—Owing to Detroit's wonderful prosperity, its manufacturers in all lines have had a remarkable season; this particularly applies to the brickmakers, all of whom have been from four to six weeks behind in their orders. Usually at this time of the year, when the weather gets cold, there is a big falling off in the brick business, but this year is an exception; the weather has been so pleasant that building operations have been going right ahead, and the demand for brick is as brisk as during the summer.

Brick manufacturers and dealers feel very optimistic as to future prospects, and are not worrying in the least over the results of the recent election. They feel that crops more than politics affect the financial condition of the country, and that in view of a banner crop year, manufacturers will continue to prosper and make such extensions to their plants as may seem necessary.

So far as Detroit is concerned, its success as a business city is bound to continue for another year at least. During the convention of the National Automobile Manufacturers at Detroit a week ago, the members were asked to make a statement of the number of automobiles their plants would manufacture for 1913. The result showed a total of 499,000 cars, of which Detroit alone will manufacture 380,300, representing a cash valuation of $700,000,000, requiring 300,000 freight cars and giving employment to over 100,000 men. This is in addition to the tremendous business done by the various accessory manufacturers, which would also run into the millions.

The George H. Clippert & Bro. Brick Co. is building a large extension to their plant, which will be ready in about 30 days. At present this company manufactures 160,000 brick daily, but when the new plant is completed, it will give them a combined capacity of 260,000 per day, the new plant alone turning out 100,000 daily. The machinery has arrived on the ground and will be placed as fast as possible. "The demand for brick continues, and we sell our entire output just as fast as we make it," said Mr. Clippert.

William Clippert is enlarging his plant and adding new equipment.

The Good Roads Commission of Kalamazoo has purchased a farm to be used as a site for the manufacture of tile, work to be done by the prisoners in the county jail. The new building will be 20 by 200 feet, and work will be begun at once. Kalamazoo will be the first county in the United States to manufacture tile for use in the construction of good roads, with prison labor. It is expected that enough tile will be manufactured so that a part of the output of the new factory can be sold to the different townships in the county.

John S. Haggerty, brick manufacturer with offices in the Hammond Building, says: "Brick business is exceptionally good and the outlook never was better. We are refusing orders every day. We have orders for five or six million brick on our books right now in spite of winter coming on. Brick have advanced in price, from $6.50 to $8 per thousand for common kiln run, owing to the advance in fuel oil. We manufacture forty million brick per year, and our plant is running full capacity all the time, and has been for a number of years."

J. C. McDonald, another brick man in the Hammond building said: "There is lots of work in sight; many masons are refusing jobs as they have more than they can handle. On account of the auto industry, Detroit is booming at a phenomenal rate; no one can realize this until he makes a trip to the outlying districts and sees the factory building that is going on everywhere."

John S. Haggerty contemplates some extensive improvements to his plant. He has secured considerable adjoining property, and is only waiting now to find out definitely whether the new terminal railway is to pass through his property. Mr. Haggerty recently returned from the Upper Peninsula where he went on a deer hunting trip.

With the refusal of the Standard Oil Co. to renew contracts for fuel oil, the brickmakers of Detroit and Wayne County, Mich., are up against a hard proposition and are trying to find some other fuel, which will burn their brick as satisfactorily. Oil has jumped from $2.30 per 100 gallons to $5.60 in a year, and, as a consequence, the price of common brick has gone up from $6.75 to $8 per 1,000.

There was a conference in Detroit a few days ago between representatives of three of the big brick companies and a New York concern, which has a gas producing machine for brick burning. It is claimed that this machine makes a coal gas which will do the work as well as any other fuel.

The gas-producer for use in brick yards consumes the coal and does not leave a coke. The gas is used while it is hot, and it is understood that the brickmakers will together buy a plant for use at one of the yards. If it does the work as well and as cheaply as claimed, it is likely that all of the big yards will install similar equipments.

The brick production of the Detroit and Wayne County yards will be about 225,000,000 this year. There is no danger of a clay shortage, but with wood eliminated as fuel, oil very high in price, and not to be had in large quantities, the brick men have a grave problem to solve.

The reason assigned by the oil producers for the advance in price is that they formerly left a small percentage of the gasoline in fuel oil, but the demand for gasoline is so great that they are extracting all of this, which takes much of the heating properties out of the oil.

The Lonyo Brick Co. sustained a small loss by fire on Nov. 10th, losing one of their smaller sheds. This will not affect it materially, although every small loss to the brickmakers at this period is a hardship, as they are behind in their orders most of the time, on account of the heavy demand.

All of the brick manufacturers, as well as other manufacturers, under the new Workingmen's Compensation Law, which became effective the first of September, are required to take out liability insurance, which is based at the rate of about $5 per thousand of the annual amount of the payroll. Many of the brick manufacturers believe the rate to be too high, and a number of them will go to Lansing in December to take up the matter with the State Insurance Department.

KENTUCKY.

Louisville, Ky., November 28.—The most reliable index to the condition of business with the brick and clay products manufacturers of Louisville and Kentucky may be found in the report of Building Inspector Robert J. Tilford, of the city of Louisville, for the fiscal year ending August 31, 1912, which shows the beginning during that time of no less than $7,091,945 worth of buildings. The fiscal year of 1911-1912, with this aggregate even exceeded that of 1910-11, which approximated $6,000,000. The year ending August 31, last, was undoubtedly marked by the biggest building boom the Gateway City has ever known. The per capita expenditure of Louisville during that time ranked third in the list of all the cities in the United States, New York coming first and Chicago second.

This condition has contributed wonderfully to making it one of the banner business years in the history of the Falls City clay-working industry. Not only are the established plants working to the limit of their capacities at a time when ordinarily the cessation of activity prior to the coming of winter would be enforced, but new companies are also entering the field. One of the oldest concerns in the local trade is being completely re-organized, for it possesses extensive properties and the men in a position to know declare that not an available brick machine in this part of the country will be left standing out of commission if there is mud to feed it.

The Hydraulic Brick Co., which was recently re-organized with A. J. Jungerman, its former secretary, as president, has not yet resumed operations. The company is getting its several properties into shape, however, and it is expected that within a few months the concern will have regained its old-time standing in the local trade, supplying many of the biggest jobs in town.

A number of the best-known brick contractors in Louisville have been conferring during the past month with a view of organizing a company and purchasing, if possible, one or both of the big yards at present owned by the Hydraulic Brick Co. This company is holding two valuable properties inactive and the contractors believe that, with reasonable capital, they can take over a yard or so and produce brick for the local building trade. It is pointed out that, equipped in this fashion, the company of contractors could take care of any season's demand which might arise in this territory, without the depressing influence of a threatened brick famine, such as that which arose last spring at the commencement of the busy season. Charles Yantz, Joseph Murphy, Fred Leezer, Sanford Vaughn & Son, Z. T. Underwood and other contractors are interested in the proposition, which has taken only a general form thus far as it is not definitely known whether the Hydraulic yards are on the market.

The Coral Ridge Clay Products Co. is being organized by well-known local business men to develop a valuable tract of clay land south of this city. W. D. Roy and L. D. Roy are chiefly interested in the enterprise at present. The plant which is being built by the Coral Ridge Clay Products Co. will be thoroughly modern and scientific in every respect, the concern having engaged the Trautwein Engineering Co., of Chicago, Ill., to plan and install the necessary equipment. Most of the machinery has been purchased from the Chambers Brothers Co., of Philadelphia, and it is expected that operations will be commenced January 1. For the first six months the Coral Ridge yards will engage in the production of common red brick, made of shale. Later, the company plans to make a complete line of clay products, installing suitable machinery from time to time as the occasion demands.

Louisville Manufacturers Optimistic.

Business could not be very well improved upon with Owen Tyler, according to his report. As president of the Tyler Hotel Co., Mr. Tyler is "the man behind the gun" in the proposed erection of a 12-story addition and other enlargements at the Tyler hotel. Plans for this work will be completed shortly after the first of the year. As a representative of the Hydraulic Press Brick Co., of St. Louis, Mr. Tyler has landed several of the finest jobs of the late summer season and is inclined to view the outlook very optimistically.

With half a dozen big jobs in hand and a host of smaller ones, the East End Brick Co. finds no opportunity for complaint in present conditions. Two or three large contracts for future delivery, which Paris M. Crane has all but closed, promise plenty to keep the East End teams busy for several months to come. The brick-work upon the new home of the Boston Shoe Co. is soon to be begun which will consume about 150,000 East End brick. An addition to the convent of the Little Sisters of the Poor is being erected of brick from the East End yards and Mr. Crane reports that unusual activity in Highland residential building is providing an outlet for a lot of high-class face brick from the East End.

Harry C. Kennedy, a well-known Louisville brick man, representing a number of clay products companies, has removed temporarily to 4222 Maryland Ave., St. Louis, Mo.

The Louisville Brick Co. has orders in hand for more than 2,000,000 brick, has just wound up a lot of business of goodly proportions, and has every reason to anticipate a steady continuance of prosperity, so that President Joseph Nevin is inclined to view the situation very hopefully. "In the way of orders which are worthy of mention," said Mr. Nevin, "we have begun delivering to the new distillery of Bonnie Brothers at Thirty-fourth and Bank streets, an order of a million or more brick. We are also furnishing material to the Ballard mills, a job of about one hundred thousand, and have contracted to supply the Louisville Railway Co. with all the brick it needs in construction and repair work about town." The Louisville Brick Co. recently installed a complete set of new screens.

Jefferson Bannon, of the Louisville Brick Co. and the Kentucky Vitrified Brick Co., recently returned from a trip to Chicago.

The Southern Brick & Tile Co. has business galore. During the past month the Bishop interests closed contracts with the Kentucky Distilleries & Warehouse Co., a big whisky concern, for several million brick, to be used in the erection of distilleries at Elk Run, Ky. Contracts have also been closed by this company for furnishing 500,000 brick to the Standard Sanitary Manufacturing Co., one of the biggest bath-tub and fixture concerns in the country. Several tile orders, going to Elizabethtown and Shepherdsville, Ky., are in the hands of Mr. Bishop, and the outlook for trade is pronounced to be most encouraging in every department of the business.

With a loss of $25,000, the plant of the Norton Brick Co., of Norton, Va., was destroyed by fire of unknown origin a short time ago.

The plant of the Busse Brick Co., of Covington, Ky., was damaged by fire, causing a loss of several thousand dollars, during the early part of October.

P. N. French, of Pittsburg, Pa., has leased the plant of the Clay Products Co., of Wickliffe, Ky. ,and will make extensive improvements and enlargements in the property, which possesses a valuable clay deposit.

The Madisonville Drain Tile Co., of Madisonville, Ky., filed amended articles of incorporation a short time ago, increasing its capital stock from $1,000 to $10,000.

THE PITTSBURG DISTRICT.

Pittsburgh, Pa., November 26.—Had it not been for the publicity given the recent National election in the public press, business interests and workers would not have realized that there was anything of especial interest "doing." Since the election, business affairs so far as the brick and clay industries are concerned, have moved along smoothly, and orders continue to come in as brisk as ever. The pessimist openly avowed that some orders would certainly be cancelled if the "election should go a certain way"—but no cancellations have been reported. In many instances, it has been the reverse—more orders have been booked.

Taking everything into consideration, the brick and clay product manufacturer in the Western Pennsylvania territory is in a happy frame of mind, and is more than pleased with general business conditions.

The car shortage, and the shortage of workmen in many sections have caused the manufacturers some annoyance, but beyond these incidents, the business sky is admitted to be very bright.

The plant of the Mt. Holly Brick Co., at Carlisle, Pa., has been razed, the materials carted away and the store of brick that was in the yard, been disposed of.

The Queen City Brick & Tile Co.; at Cumberland, Md., plans to increase the capacity of its plant, so as to manufacture 50,000 brick per day.

An action for over $27,000 has been instituted by the Perkiomen Brick Co., of Montgomery county, Pa., through its attorneys, J. Bennett Nolan and Joseph R. Dickinson, against the Montello Brick Co., of Reading. It is planned to collect on an alleged lease of the plaintiff's plant at Oaks. No statement has been filed.

The following notice has just been issued by the Clymer Brick & Fire Clay Co.:

"On and after Oct. 29th, 1912, all mail and express matter, telegraph and telephone messages sent to us should be addressed to Clymer, Indiana County, Pa. Telegrams via Indiana, Pa. Our patrons and correspondents are kindly requested to make careful note of this change of address."

One law that may be amended at the next session of the State Legislature is the mechanics' lien law, under which those who supply materials used in building construction can lien a building for materials even though, under some circumstances, the contractor has received from the building owner the money wherewith to pay for the materials. As it is now, a contractor sometimes receives money to pay for materials, but fails to pay for them. A signed release of liens does not always protect the owner of a building. If he pays the contractor, and the contractor fails to pay for the materials, those furnishing them can file a lien against the building and the owner of that building has to pay for the materials or labor a second time. All this will have to be done before his building can be considered free of liens.

One suggested change in the laws is that the owner and the contractor be required to give bond for the payment of all materials before they are delivered to the job, and in this way the lien methods will be done away with.

This new proposition concerns not only brick people, but those who handle any material that goes into a new building.

CHICAGO.

Chicago, Ill., November 28.—Winter is upon us, though it has been mild as yet and building operations are still on the upward move. The clay demands, as a result of this late activity, have continued strong, and while there has been a falling off in the past few weeks, it has been considerably smaller than is customary at this season.

It will be recalled that the late spring held up operations for some time longer than usual, and that the real work did not begin until about April. Consequently, in a few short months, Chicago has consumed many thousands of tons of burned clay material. In fact the cases were very few and exceptional in this big city, where other than clay materials were used in building operations.

The extension of the fire limits here has done much to increase the demand for clay materials, and the local operators have been the beneficiaries. Much credit for the increased demand was due to the effects of the clay show and it is safe to say that the results of the next show will be still more far reaching. The good work has just begun and the clay men here are showing much more interest than last year, and it is said the Chicago display will be much larger and more instructive although it is difficult to see how that of last year could be improved upon.

The big brick plants are still in full operation. The call for building and sewer brick has been strong, the one complaint, being the lack of cars to move the stock as rapidly as desired. Many brick are now being stored in the yards, to take care of early spring demand.

There has been some decline in the face brick demand, as is usual at this season. Still there is enough to keep most of the operators busy.

There are to be several contracts let for brick sewers here within a short time. Concrete sewers were tried here without success, and the letting of these coming contracts will mean a demand for a very large number of brick.

Sewer pipe prices are firm but the season is practically over for this industry. The latter part of the year has brought a better demand and higher prices. Many of the plants will continue to operate, and stock up the yards for spring.

The Chicago Retort & Fire Brick Co., has recently broken ground for a very material addition to its large plant at Ottawa, Ill. It will be several months before the addition is completed, but it will mean an increase in capacity of fully fifty per cent, which will make possible, the satisfactory and rapid handling of the company's increasing business. Mr. C. S. Reed is much pleased with the steady progress of the industry and the continual growth of the company's business within the past year. Several new kilns, of the round down draft type, are being built, and more brick machines and boilers added. Motors and dynamos, the latter of the Westinghouse make, and boilers of the Babcock and Wilcox make, have been installed, so that it will be possible to operate the plant in future with electric power.

In addition to the other improvements there will also be a new office building erected. All of the new equipment has been purchased, and the construction and equipment work will go forward rapidly.

The Curtis Brick Co., still continues to operate its plant and the demand for brick remains good with the company, which has had a good year's business.

Mr. White, of the Jenkins & Reynolds Co., stated that he was well pleased with the demand for face brick, and with the past season's business.

Thomas Connolley has enjoyed a good year's trade in sewer pipe and kindred lines and is much pleased with the business done, and particularly with the good prices that have prevailed of late.

The National Brick Co., finds it difficult to move building brick as rapidly as desired owing to the difficulty in getting sufficient cars. The company is, on the whole, well pleased with the amount of business done during the season and has no complaints to offer.

The demand with the Bonner & Marshall Co., is still good and Mr. Bonner was heard to say the company had enjoyed the most prosperous year of its existence. Mr. Montgomery of the Midland Terra Cotta Co. is gratified with the business his company has done during the past year and the indications for next year are favorable.

The Carey Brick Co., still reports a good demand for brick, and the plant is still as active as ever. The year has been a good one for all the brick men here, and this company has had its share of the prosperity.

The Wm. E. Dee Co., notes a decrease in the demand for sewer pipe and other clay specialties which it manufactures, but, the year's business, as a whole, has been very gratifying to the company. Mr. Dee has just completed a new home, constructed of hollow building brick, which the company is now engaged in manufacturing, and the house is a fine specimen of what it is possible to produce with this material.

OHIO.

Columbus, O., November 28.—Indications point to the fact that the majority of Ohio brick and sewer pipe manufacturers will have a lot of unfilled orders on their books when the year closes a few weeks hence. Taking everything into consideration, the clay manufacturers of the Ohio territory have had an exceptionally busy season, and the prospects are that 1913 will exceed the current year, so far as shipments and new orders are concerned.

The American Sewer Pipe Co., with general offices at Akron, O., has been compelled to place inactive properties under its control in operation within the last few months, which indicates the character of business this large and growing concern has on its books.

In the Eastern Ohio sewer pipe district, every plant is working to the limit of capacity, and at Toronto, O., a new sewer pipe plant is being erected by independent interests.

The fire brick and paving brick and block manufacturers in the Ohio Valley territory, from the Eastern state line down the stream to the Portsmouth field, are also busy, in fact, they will be unable to ship all orders booked for delivery this year.

Shortage of cars has had a lot to do with belated shipments, and on this score, the manufacturers are complaining most bitterly. The railroads, however, cannot be blamed for the shortage, for the reason that the traffic officials ten months ago never dreamed of the present increase in business.

Information is to the effect that Paul G. Willits, a well known clay pot manufacturer of Pittsburgh, Pa., is at the head of a company which recently closed a deal for the purchase of a tract of clay lands in Ballard County, Ky., the clay to be used in the manufacturing of clay pots for glass manufacturers.

With a capital stock of $10,000 the Home Brick Co., of Cambridge, O., has been formed by Mack Greenwald and John Elliott, of Cambridge. The new company will operate a brick manufacturing plant in the vicinity of Cambridge.

The Ohio Public Service Commission, which meets in Columbus, has been asked by the Colonial Pressed Brick Co., and other manufacturers to compel better shipping facilities by the Akron & Barberton Belt Railroad, which operates between Akron and Barberton, O. The belt road is owned jointly by the Pennsylvania, New York Central, the Erie and the Baltimore & Ohio railroads.

The Calumet sewer pipe plant at New Cumberland, W. Va., which is across the Ohio river from Toronto, O., and which has been idle for several years, has resumed operations on full time.

J. E. Hostetter plans the erection of a new brick plant in the Sugar Creek district near Uhrichsville, O. He will form a new company with a capital stock of $50,000.

At Summittville, O., west of East Liverpool, O., on the main line of the Cleveland & Pittsburgh railroad, a large brick and sewer pipe plant is to be erected. Foundations for four kilns which were constructed by a company that previously planned to operate at this point will be the basis for the building of a battery of ten kilns. There is a large acreage of clay in this vicinity, which is virgin, so far as development is concerned, and this property will be worked. Large coal mines are adjoining this property, and fuel for kiln firing will be procured from these mines.

The Central Brick & Pottery Co., with $500,000 capital, has been formed by J. J. Pheelan, of New York city. The new company secured its charter under the laws of Delaware.

C. A. Taylor & Co., of Cincinnati, O., have bought land and clay beds in the vicinity of Enterprise, Ky., where they will erect a brick plant at a very early date. This improvement will cost in the neighborhood of $10,000.

The Ohio Ceramic Engineering Co., Cleveland, advises that it has taken an order for 1,000 brick dryer cars for the Sayre & Fisher Co., Sayreville, N. J., to be shipped some time in February of next year. The Ceramic company, organized about seven years ago, has been enjoying the best season in its history, and has enough orders on its books to keep its plant busily engaged for about four or five months. In September all previous records were broken and October was almost on a par with the preceding month.

Captain John Porter, the "Fire Brick King," of Kenilworth, W. Va., who owns a large plant at that place, complains of a shortage of cars to fill the large number of orders reaching his plant daily. He says he could use ten cars daily, but there are many days that no cars can be secured. The plant is being operated night and day, and from the number of orders received this promises to be the banner year in the history of the brick business in that section.

The Hydraulic Pressed Brick Co. has received the order for furnishing all the brick to be used in the construction of the brick and stone City Hospital, at Wheeling, W. Va. The general contract for this building has been secured by the James Stewart Co., with offices in the Oliver Building, Pittsburgh, and sub-contracts are now being awarded.

A large six-story steel and concrete building, while under construction at Saskatoon, Sask., collapsed.

After an illness of several days, Thomas Carey, 4427 Grand Blvd., president of the Carey Brick Co., Chicago, has recovered and is now able to resume his daily trips down town.

A new concern, known as the Sundown Clay Co., will mine clay from a pit between Cardonia and Carbon, near Brazil, Ind. Those back of this new enterprise are Messrs. Price, Morgan and Stevenson.

Mr. Warren Overpack, formerly of Mason City, Iowa, but now of Medicine Hat, Alberta, is arranging to put in a large brick works at the latter place.

Mr. Overpack has been spending some time on this side of the line and has placed an order with The Bonnot Co., of Canton, Ohio, through its agent, The Chicago Brick Machinery Co.

The outfit will be one of the largest size, including a Canton special brick machine and rotary automatic cutting table. Mr. Overpack will push the work of building and expects to have the plant in operation by May 1st.

The Canton Pressed Brick Co., of Canton, Ohio, which changed its name to the Belden Brick Co., is installing a stiff mud outfit purchased from The Bonnot Co., Canton, Ohio. This improvement was made necessary by the increase of business.

The Bonnot Co., of Canton, Ohio, reports business very good, sales being especially good on the large Canton special brick machine. Among recent sales of these machines are two for the Metropolitan Paving Brick Co., which already is using a number of machines of the same type.

TEXAS.

Austin, Texas, Nov. 28.—An increase of activity in all lines of building trades throughout the state is noted. According to the records of building permits, issued in the principal cities during the month of October, there was a considerable increase in the value of the buildings for the erection of which permits were granted over those of the previous month. The total amount involved in the permits issued in the cities of Houston, Dallas, San Antonio, El Paso, Fort Worth, Waco, Galveston, Beaumont and Austin for October was $1,257,459 as compared with $1,109,721 for the preceding month.

Indications point to a still greater increase in the total value of permits for these cities during the month of November. Owing to the mildness of the climate in Texas, during the winter, outside construction work is continued without interruption. In fact, many contractors much prefer to carry on their work during the winter months than during the hot summer period. They find they are able to obtain better services from their laborers and that more rapid progress may be made in construction operations.

While the smaller towns of the state do not appear in the monthly records of building permits, it is a noteworthy fact that some of these towns, of populations ranging from 15,000 to 20,000, have monthly records of the value of building permits issued that compare favorably with those of the larger cities of the state of Texas. Perhaps in no other state are the smaller towns making a more rapid and uniform growth than those of Texas. This is particularly true of the newer settled portions. Many new towns that are only three to five years old have populations ranging from 3,000 to 6,000 people. Their business buildings and residences are of the most modern and attractive type both in style of architecture and construction features.

The Barker Construction Co., of Denver, Col., recently closed a contract through the office of Messrs. Repath & McGregor at Douglas, Ariz., for the purchase of 20,000,000 brick to be used in the erection of the United Verde smelter at Jerome, Ariz., which Senator W. A. Clark of Montana is to put up.

Need of Brick Felt at Tampico, Mex.

On account of the failure to obtain a sufficient supply of brick at a reasonable cost, all of the larger new buildings that are being erected in Tampico, Mexico, are of reinforced concrete construction. It was pointed out in our letter, a few months ago, that a splendid opportunity was afforded for the establishment of a large brickmaking plant at or near Tampico. No other city in Mexico is making more rapid progress in the erection of new and modern buildings than that port. As a result of the statement in "Brick and Clay Record," of the demand for brick there, a number of Americans made inquiries and investigations of the possibilities of the proposed industry. While all of these men found that the demand for brick in Tampico and other parts of the Gulf coast region of Mexico was very large and would justify the establishment of a plant of considerable size, no clay deposit of the desired quality, it is claimed, has as yet been found within convenient distance of Tampico. The search for an available supply of clay is still going on and it is thought that investigation in this respect may yet result successfully.

CANADA.

The demand for brick from one end of Canada to the other has been so great that the manufacturers there have been unable to supply it and in many cities building operations have been seriously delayed by the shortage. The wet weather during the summer interfered with the outdoor drying, which greatly lessened the output.

Jas. Breckendorff, of Peterboro, Ont., is reported to be considering the building of a brick plant at Calgary.

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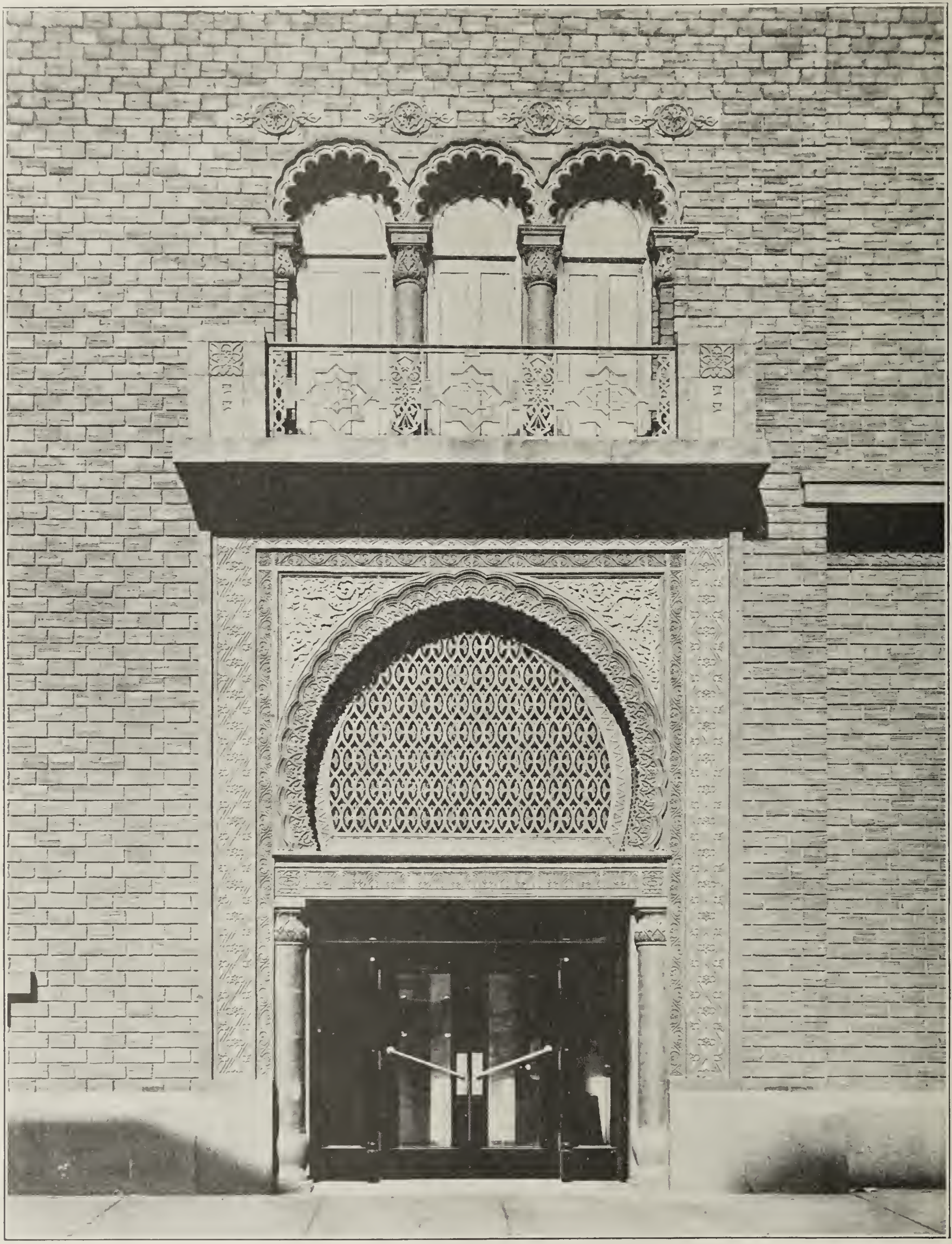

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Dec. 15, 1912

CLASS HOLLOW BUILDING BLOCK WITH CONCRETE

Insurance Companies Do An Injustice to Manufacturers of This Product by Charging Same High Rate of Insurance as for Cement Construction, Denying That Either Equals Solid Brick Walls in Fireproofing Quality

Should a building, whose walls are constructed of hollow clay block and veneered with facing brick, be classed by the insurance companies of the nation with concrete, which is 37½ per cent higher than solid brick construction—the recognized standard of fireproofing?

The Wisconsin Inspection Bureau, the Illinois Bureau of Inspection, the Western Actuarial Bureau, which fixes the insurance rates, and the Underwriters' Laboratories, which makes the test of fireproofing material by which the rates are determined, seem to think that hollow clay block and concrete are on a par with each other, when it comes to insurance risk.

The question is a vital one, because the ruling is an unjust one to hollow block, and it behooves every manufacturer of this material to take such steps as will give it a proper classification.

By JOHN GRAYAR

THE insurance companies of the United States have placed hollow clay building block in the same class with concrete construction, thus forcing the payment of a rate, 37½ per cent higher than solid brick wall construction, which they declare is the only absolute fireproof material for construction work and, therefore, is the standard to be used in computing rates.

This ruling works an injustice on hollow clay block and steps are now being taken by "Brick and Clay Record" to bring about a better classification.

Investigation reveals that no thorough laboratory test ever has been made by the Underwriters' Association of America in the case of the hollow block and that the rate is based almost entirely on theory. With an exhaustive test, such as this journal hopes to have made at no distant date, it is believed that hollow tile block, used according to the standard construction specifications, will be given the same rating as its sister building material—brick.

There is every assurance, at least, that the rate will be materially lowered, as already the Western Actuarial Bureau, through its manager, Mr. J. V. Parker, declares that it is of the opinion, without positive data to go on, that hollow block deserves a better classification, and that a test under the supervision of the Underwriters' Laboratories will give it the power to make the reduction.

It was through the experience of Astrid S. Rosing, dealer and manufacturer in hollow building block and other clay products, with offices in the Harris Trust Building, Chicago, that the unjust classifications came to light.

Charles Engelhardt, a representative of the Rosing concern, was in Appleton, Wis., recently and advised an architect, who was drawing the plans for a garage to be constructed for a patron, to specify hollow block walls with a press brick facing. The strong arguments Mr. Engelhardt made for the hollow block appealed to the architect and he made his specifications accordingly, using standard construction—that is, the hollow block walls with four-inch brick facing.

When the architect submitted his plans to his patron, the latter was deeply impressed with the hollow block suggestion, particularly as to the matter of cost, and gave his approval for the use of the burned clay block. This consent, however, was given with the understanding that the architect was to investigate the insurance rates and ascertain whether there was any difference between hollow block and solid brick construction.

Architect Gets a Jolt.

The architect was given a jolt when he ascertained from the local Underwriters that the hollow clay block rate was the same as that given concrete construction—thirty-seven and a half per cent higher than solid brick. He lost no time in communicating with the Chicago dealer.

Surprised at the information revealed in the architect's letter, the Rosing concern addressed the following letter to the Wisconsin Inspection Bureau at Milwaukee, Wis., under date of November 23:

> Please advise what rate of insurance your Bureau quotes on building construction composed of a brick veneer with a hollow tile backing, also on buildings in which hollow tile is used exclusively for walls, which material is used in all large fireproof buildings.
>
> There has been some discussion regarding the use of this material in a garage being constructed at Appleton. The contractor and architect informs me that the insurance folks quoted a higher rate for buildings of this construction than on solid brick structures. It is my contention that hollow tile, or tile and brick construction, takes the same classification as brick.
>
> Shall be pleased to hear from you at once on this subject.

Under date of December 2, H. C. Griffing, manager of the Wisconsin Inspection Bureau replied:

> Replying to yours of Nov. 23rd would say that a hollow tile building, or a hollow concrete block building is estimated by us about 37½ per cent higher in Appleton, than a solid brick building. We have no very definite rule for figuring hollow tile buildings veneered with brick, but about the same increase would probably be made over a brick building.
>
> The above is according to the analytic schedule which is in use in this state.

It will be observed that Mr. Griffing admits there is no "very *definite* rule for figuring hollow tile buildings," and says that in the absence of the same the concrete classification is used.

Under the date of December 3, the Rosing concern replied to the above letter as follows:

> In reply to your letter of December 2nd. I do not see why you should class fireproof hollow tile in the same category as concrete blocks. For your information, wish to advise that this job at Appleton was intended to be of a brick veneer construction, that is, using the standard 4-inch press brick for the outside finish and then lining this wall with fireproof clay tile, 5 in. x 8 in. — 12 in. in dimensions, with two air cells. Clay tile of this size has a crushing test of nearly 100,000 lbs. per piece and thus you see is amply strong to meet any requirement. Not only this, but in using clay tile, such as contemplated, you have the advantage of two hollow air spaces in the wall.
>
> I also wish to advise that the finished coat of plaster can be applied direct to the tile without any wooden furring whatsoever which is required in concrete block or brick construction. So you see that the wall has absolutely nothing of an inflammable nature in this kind of construction.

Above is a Substantial Creamery Building at Withee, Wis., of Hollow Block, Veneered with Brick. Below are Shown Exterior Hollow Block Walls, and Interior Walls, Ready for Plastering.

> I shall be very glad to submit a sample of this tile to you in order to have this rate, which you quote, corrected, as this is the same class of fireproof material which enters into the construction of all the large skyscrapers, which buildings would not be possible were it not for fireproof hollow tile.

The above letter, more insistent than the former ones for some "definite ruling" on hollow clay block, brought the following reply under date of December 4:

> Replying to yours of Dec. 3rd would say that our charging more for hollow tile is in accordance with the schedules that are applied generally in the Northwest, and we believe the charge is warranted by experiments made with this material as compared with brick. As stated in our previous letter, there might be some modification of the increased charge in the construction noted for Appleton, but we are uncertain as to just what it would be at present. If you wish to have your concrete and tile blocks placed on an equal footing with brick, we would advise you to take the matter up with the Underwriters' Laboratories at Chicago, and Mr. J. V. Parker, Mgr., Western Actuarial Bureau. The Underwriters will probably make the necessary experiments, and if the blocks stand the test Mr. Parker will probably give the matter of schedule charges careful consideration.

Mr. Griffing, in the above letter, again admits that a proper test of hollow clay block might bring "Some modification of the increased charge in the construction" of the Appleton garage building, but he was, "uncertain as to just what it should be at present."

As a way of bringing about the proper adjustment of rates, Mr. Griffing advises the Rosing concern to consult with the Underwriters' Laboratories of Chicago and the Western Actuarial Bureau, also of Chicago. This first named organization makes the tests for the insurance companies on all building material submitted it and the latter body, guided by the result of these experiments and tests, fixes the insurance rates.

Mr. Engelhardt, the Rosing representative, acting on the advice of Mr. Griffing, placed the problem before the

(Continued on Page 477.)

WHAT MAKES BRICK HOUSES COST MORE?

This Investigator Blames the Bricklayer Whom He Says Must Be Reformed Before Clay Gets Its Own

When the brick manufacturer has succeeded in convincing the prospective house-builder that burned clay is the proper material to use because of its durability, its architectural beauty and its resistance to moisture, cold and heat, he usually is floored with the question of cost. Mr. Walker believes he has solved this only handicap.

By IRWIN CHARLES WALKER

BURNED clay as a building material costs no more than its less desirable competing materials, the popular idea to the contrary notwithstanding. And yet a brick house, paradoxical as it may seem, costs from five to twelve per cent more than does one of frame, stucco or concrete.

These two facts were established by an investigation made among Chicago building contractors and architects during the past few weeks, and prompted a still further investigation to ascertain just why such a condition should exist. Here is the conclusion:

> **Brick, while comparing favorably as to cost of material laid down on the ground, with that of any other material, costs MORE in the building.**

In other words it is not the material that makes brick houses cost more, but the labor that places that material in the building.

Further investigation showed these facts:

THAT carpenters receive 60 cents per hour, or $4.80 for a day of eight hours with no limit on the amount of work they are to perform.

THAT concrete workers are unskilled laborers receiving from $2 to $2.50 per day of eight hours, with no limit as to the amount of work they are to do.

THAT bricklayers receive $6 a day of eight hours with a helper to each bricklayer who receives $4 a day and with a limit of 1,000 brick per day's work.

It can be seen then from this that the building brick industry of Chicago, and the same statement may stand for almost any city in the United States, is suffering from "bricklayeritis," and that the ailment is one that is so serious it requires prompt attention if the patient expects to have good health and remain vigorous.

Those that build homes are human like the rest of us. They are swayed by the same emotions and prompted by the same spirit to get the most for their money as you and I. They will listen to reason and argument. You may be able to convince them with very little trouble that burned clay is the proper material to use in constructing the little home that has been planned. They may even go so far as to instruct the architect to specify brick or hollow tile.

There comes a stumbling block, however, when the matter of cost comes into consideration. They may want burned clay, but if it is going to cost them a few hundred dollars more to use it, they are going to hesitate.

The fact that more frame houses were erected during the past season in Chicago than any other kind, shows that the hesitating class is in the majority and that class must be seriously considered by the clay product manufacturer.

Lays Blame to the Bricklayer.

"It is the bricklaying that is at the bottom of the entire problem," said one Chicago dealer when approached to offer some solution. "The manufacturer has minimized the cost of making his product by the installation of modern methods and machinery but has overlooked the fellow that puts his product into the walls."

This dealer seems to have hit the nail on the head, to use a trite expression. It is to the bricklayer the building brick industry must look in the future.

Investigation of the bricklayer and his relation to the manufacturer showed these facts:

He is thoroughly organized into a trade union.

He fixes his scale wage at $6 per day and that of his helper at $4 a day.

He forces the contractor to employ one helper for every bricklayer on the job.

He refuses to lay more than one thousand brick a day and penalties are imposed on a union man who goes beyond this limit.

He refuses to teach an apprentice and will not allow one on the job.

In no other industrial line will you find this same condition existing. In no other trade will you find these exacting restrictions.

"What we need is a school for bricklayers," suggested one manufacturer. "If there was such an institution turning out competent bricklayers we would soon solve this problem of construction. It is a shame to think that we have to compete with the building material people with our product and then run up against a stone wall like the bricklayer when we have landed the contract.

"There is a scarcity of bricklayers now, but if we could turn them out like trade schools turn out printers, carpenters and others, there would be a different story.

"Look at the electricians. Why, a few years ago it was almost impossible to get a competent electrician at a reasonable price. Today, however, it is different. They are still getting good wages, but they are doing more work and better work."

It was suggested that the union bricklayer argued he was not getting more than a living wage today.

Complains of the Limitations Imposed.

"Let him have his $6 a day," replied the manufacturer. "I don't begrudge him his wages. What I do kick about is the output. He limits himself to 1,000 brick a day, and yet it is a poor bricklayer who cannot put 3,000 brick in a wall every day in the week. That makes quite a difference, doesn't it, when you begin to figure construction cost? Take for instance common brick here in Chicago. You can get them laid down on the job at $6 per 1,000. Yet you've got to pay $10 to have them laid in the wall—or $4 per 1,000 more than they cost to manufacture.

"What we want is to have the restrictions taken off the amount of labor a man can do in a day. If he can lay 2,000 brick or more let him do it. Then, too, there is the question of helper. By the rules of the union every bricklayer must have a hod carrier, who must be paid $4 a day, yet where there are a dozen bricklayers on the job one or two would be sufficient.

"As it is today with ten men on the job the hod carriers are so numerous they get in each other's way, and there is so little for them to do they have a hard time to find an excuse to keep moving."

Sees Solution in Trade School.

Our friend struck a key note when he said the solution was in the trade school that "could turn out bricklayers like the printing schools and other trade schools do."

Investigation, however, shows that there is only one trade school in the country that offers a special course to the bricklayer, or at least only one that has made itself known by advertising its facilities in the public press. This institution is the Coyne Trade School of Chicago.

$5.00 to $8.00 Per Day
MORE MEN WANTED
Write today! Jobs—good jobs open. We offer to teach you in a few months time—at a small expense—so that you can start right out and make $5 to $8 per day or go into business for yourself and make $3,000 to $5,000 a year from the beginning. Our school is the oldest, largest and best equipped trade school in the world. Our free employment department takes care of students all the time.
Men Wanted for These Trades
Electricity, Plumbing, Bricklaying
Painting and Decorating, Moving Picture
Operating, Mechanical Drawing
There are unlimited possibilities in every one of these trades. When you have completed our course, you will be in a position to demand from $5 to $8 a day right on the jump. And if you go into business for yourself as a great many of our students do, you can make $3,000 to $5,000 a year easily. Some make as high as $15,000 and $20,000 a year. You can do the same.
Start a Business of Your Own.
You can be your own boss. Hundreds of our students have gone into business for themselves and are making big money. It's easy! And our complete course fits you to handle every detail of a business of your own. Very little capital needed.
Free Tools
We will furnish all the tools and material you use in taking our course. You do not have to buy any equipment. Everything is furnished absolutely free by us. Very small cost for tuition and living expenses. Many of our students earn their expenses while taking a course.
We Teach You at Small Expense—
and in a short time to be an expert. All you have to do is to pay a small tuition fee. Your tools and equipment of all kinds are furnished free by the school. Easy payments if desired. You can earn your tuition and all expenses the first month out of school. Our instructors are all practical men—experts in their trades. We occupy every foot of our big $150,000 building. You have the practical work to do right in the school. The school is open all the year. You can enter any time. Day and night sessions. Free employment department.
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Name..............................
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If every brick manufacturer in the country could be enthused to the pitch of doing a little local missionary work by encouraging young men of their community to get in touch with this school or some other school of like nature, if one exists, it wouldn't be long before the bricklayers' union would be forced to change some of its restrictions.

The law of supply and demand applies to trade and labor just as it does to industries and capital. Scarcity of labor makes labor arrogant and tends to create a monopoly just as scarcity of capital tends to create a monopoly in an industry.

With the bricklayers' monopoly broken and the doors open to young men who want to learn a profitable trade amicable relations will be possible between the employer and the employe, the brickmaker and the bricklayer. Until then the brickmaker must continue to carry the burden he has today.

The Peebles Paving Brick Co., Portsmouth, Ohio, recently installed an immense new engine.

TERRA COTTA A GENERAL FAVORITE

On Account of Its Adaptability, Its Beauty and Its Fireproof Qualities, It Is Being Specified for High-Class Buildings

"Largely on account of its excellent qualities as a fireproofing material and the readiness with which it lends itself to intricate and beautiful designs for building ornamentation, terra cotta is being more generally specified for the higher class construction than ever before," says a writer in the "Architect and Engineer." He discusses the matter at some length as follows: "One point urged by architects in favor of terra cotta is the fact that it can be easily matched with any colored brick or stone and concrete.

"The modern employment of terra cotta is a revised taste and the result of laudable efforts of architects to get lasting and honest ornamentation in lieu of sham effects procured through the use of stucco and galvanized sheet iron.

"In faithfully made and vitrified terra cotta, we have the great and only lasting triumph of man over natural productions, for properly and thoroughly burned terra cotta will pass through the centuries, being not only fireproof, but also in all architectural employments practically time proof and indestructible. Good construction, next utility, and last decoration are the order in which the design should be carried out. The last requires an artist who is inventive enough to make the ornament harmonize with the purpose of the object and decoration in the place it is to occupy.

"Terra cotta is clay, burned and reburned in the process of manufacture. It is said its sound-proof properties are superior to those of wood, either the porous or the closely aggregated material being used to line the walls to prevent sound from going through or to preserve a surface of neutral character, as the case may be, thus assisting and modifying sound.

"A building faced with enameled terra cotta may be washed without difficulty, and this fact has been demonstrated frequently in many cities.

"'The durability of terra cotta has been proved by specimens, preserved to the present day,' one writer says, 'conveying records of the earliest nations known to history. Its effectiveness in absolutely protecting the steel skeletons of 'sky scrapers' was demonstrated by the Baltimore fire. High compressive strength, combined with clearness of surface and lightness, add to its value.

"The material was used for decorative purposes in Greece, Rome, medieval Italy, Pompeii and Etruria, most of the supply coming from the clay plains of Northern Italy. From those early designs came the latter ones in Great Britain, from the fifteenth century to the eighteenth, at which time its use was discontinued.

"Little 'stock' terra cotta is kept by manufacturers and the architects are given absolute freedom in carrying out their ideas on paper. These sketches are submitted for bids to the various manufacturers, exactly as building contract bids are asked. The lowest bidder makes models according to the design, then photographs are sent to the architects who make alterations or corrections."

HOW TO OVERCOME LAMINATION

Most Troublesome Defect in Clay Manufacture Overcome by Proper Construction and Operation of the Die, With Due Care to Molding and Cutting Process

In the manufacture of clay ware, much depends on a proper understanding of the principles which underlie the construction and operation of the lubricated die. If insufficiently lubricated, the friction of the clay against the die causes trouble— too much lubrication causes trouble of another sort. In his address before the N. B. M. A. in Chicago last March, Mr. Stull, now at the head of the Ceramic Department of the University of Illinois, gave some excellent practical advice on this important part of clay manufacture.

By R. T. STULL

IN THE manufacture of clay products by moulding stiff tempered clay in a continuous bar on column and wire cutting, the most troublesome defect and the greatest weakness in the product is due to laminations, of which there are two well recognized forms called auger laminations and differential laminations.

The streams or strands of clay are delivered from the auger wings in helical form, and in this condition the clay is forced into the die. The strands of clay are imperfectly welded as the clay passes through the die, thus giving a structure similar to the twisted strands of a rope. Figure 1 shows the center or core taken from an end-cut brick in which the two twisted strands of clay from the auger wings can be seen. The arrow shows the direction of flow of clay in passing through the die.

On account of the friction of the clay against the iron with which it is in contact the clay flows at a greater speed at the center of its stream, resulting in a structure resembling overlapped cones, giving what is called a differential laminated structure. The overlapping cone or differential structure can be best studied in a clay column issuing from a plunger machine, where the auger laminations are entirely eliminated. In the case of the auger machine the final laminated structure is the result of the combined influences of the auger and differential flow. This structure is illustrated in Figure 2, taken crosswise of an end-cut brick. The structure resembles an irregular coil protruding at the center.

The laminated structure appears differently when the brick is broken in different directions. The appearance of the laminated structure, due to the combined influences of the auger and differential flow is illustrated in Figure 3, showing the fractured surface of an end-cut brick broken lengthwise through the center. The laminations appear in "zigzag" lines across the brick.

One method of reducing auger laminations consists of an extension provided with cross bars (Figure 4) placed between the auger and the die. The extension with its cross bars reduces auger laminations in two ways. First, it places the die farther away from the auger, which reduces the coiled structure, but at the same time increases the differential laminating structure and decreases the velocity of flow of the column.

Troublesome Auger Laminations.

The cross bars break up the coils as they leave the auger wings and are most effective when placed close to the auger. If the bars are placed too close to the die the brick may crack or separate in drying along the planes cut by the cross bars. With some clays it seems impossible to use a cross bar or core bridge between the die and auger without causing the ware to split in drying. By placing the die farther away from the end of the auger and using cross bars the auger laminations are reduced, velocity of flow reduced and differential flow increased. The closer the die is placed to the auger the greater is the velocity of flow, the more prominent are the auger laminations and the less apparent is the differential structure. Auger laminations are far more troublesome than those produced by differential flow, as can be verified by some of our brickmaking friends who have changed from the old plunger machine to the auger type.

Besides the auger structure there is considerable differential structure in the clay on passing into the die. The laminated structure in the clay as it enters the die cannot be destroyed as it passes through the die, but it can be modified by the manner in which the die is constructed and lubricated.

If the die is insufficiently lubricated, the friction of the clay against the die increases differential flow. The object of lubrication is to reduce friction and consequently reduce differential flow. In order to be most effective lubrication should be introduced as close to the intake opening of the die as possible, thus not only overcoming the differential flow which would otherwise take place in the die, but also increasing the velocity of flow of the clay column.

Fundamental Principles of Lubrication.

In order to design a die of high efficiency it is necessary to understand the physical behavior of clay and the fundamental principles of lubrication. For the present purpose, stiff tempered clay may be regarded as a semi-fluid, in which an applied force AC at a given point, C (Figure 5), is transmitted unequally in different directions, giving approximately an elliptical diagram of transmitted pressures. The transmitted pressures perpendicular to the taper lines, or inside face of the die, are the pressures which force the clay against the die and oppose lubrication. The lubricating fluid then in order to be effective must be admitted to the die under a pressure at least equal to the opposing pressure of the clay against the die.

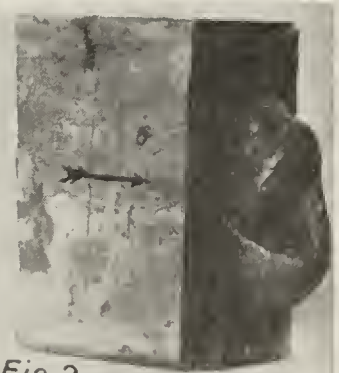


Fig. 2

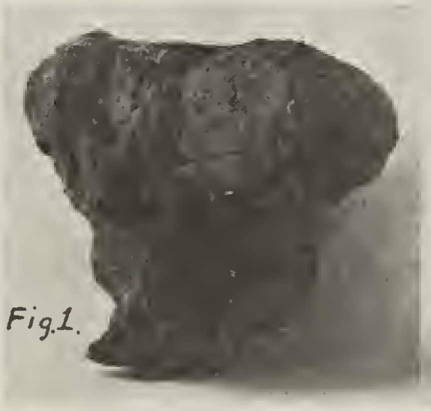


Fig. 1.

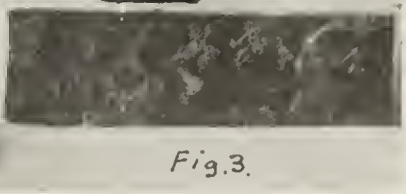


Fig. 3.

The greater the taper of the die the greater is the pressure opposing lubrication. Figure 6 is an illustration. CD and EF represent the taper lines of a die. The transmitted forces A and A perpendicular to the taper lines CD and EF are the forces opposing lubrication at these points. If the taper of the die is increased so that GD and HF become the taper lines, then forces B and B perpendicular to the taper lines are in opposition to the lubricating force. Since B is greater than A it follows that the die of small taper requires a lower lubricating pressure than the die of large taper.

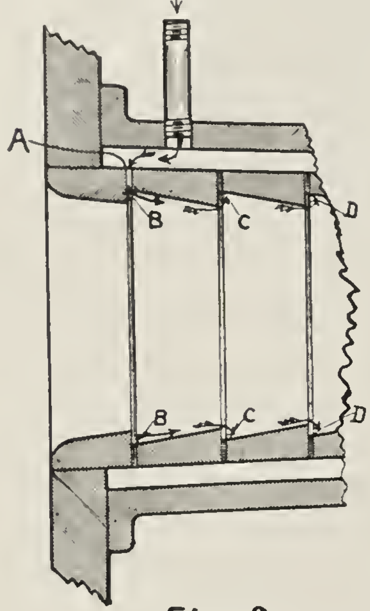


Fig. 9

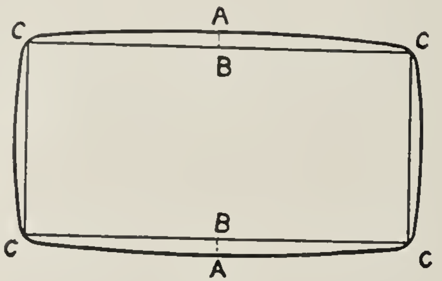


Fig. 10

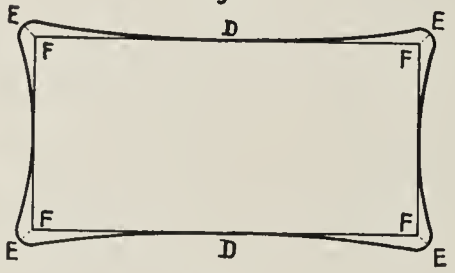


Fig. 11

The lubricating fluid will go to the point of least resistance. Therefore, it can be drawn to any point desired in the die, simply by reducing the taper line passing through that point.

Friction is greatest in the die at the corners and least at the middle, top and bottom. It is desirable, therefore, to relieve the friction at the corners as early and as completely as possible, consequently the die should be constructed with the smallest taper at the corners and greatest taper at the middle top and bottom.

The proper taper lines to give the die is a problem depending upon a number of factors, namely: 1. Nature of the clay. 2. Stiffness of temper. 3. Capacity of molding machine. 4. Amount of back pressure exerted by the carrier and cutting tables. 5. Shape of the column. 6. Length of die.

From practical experience it has been found under normal working conditions that the variation in taper at the middle, top and bottom of the die should be from one-eighth inch to one-fourth inch to the foot (Figure 7), and the taper at the corners less than one-eighth inch to the foot, for dies between seven and twelve inches in effective lengths.

Short clays, stiff tempered clays, molding machines of high capacity, high back pressure and long dies require smaller tapers, and the converse of these conditions requires larger tapers.

A long die with a small taper per linear foot gives a much better column than a short die with a larger taper per linear foot. This is especially true in lubricated dies for large capacity machines.

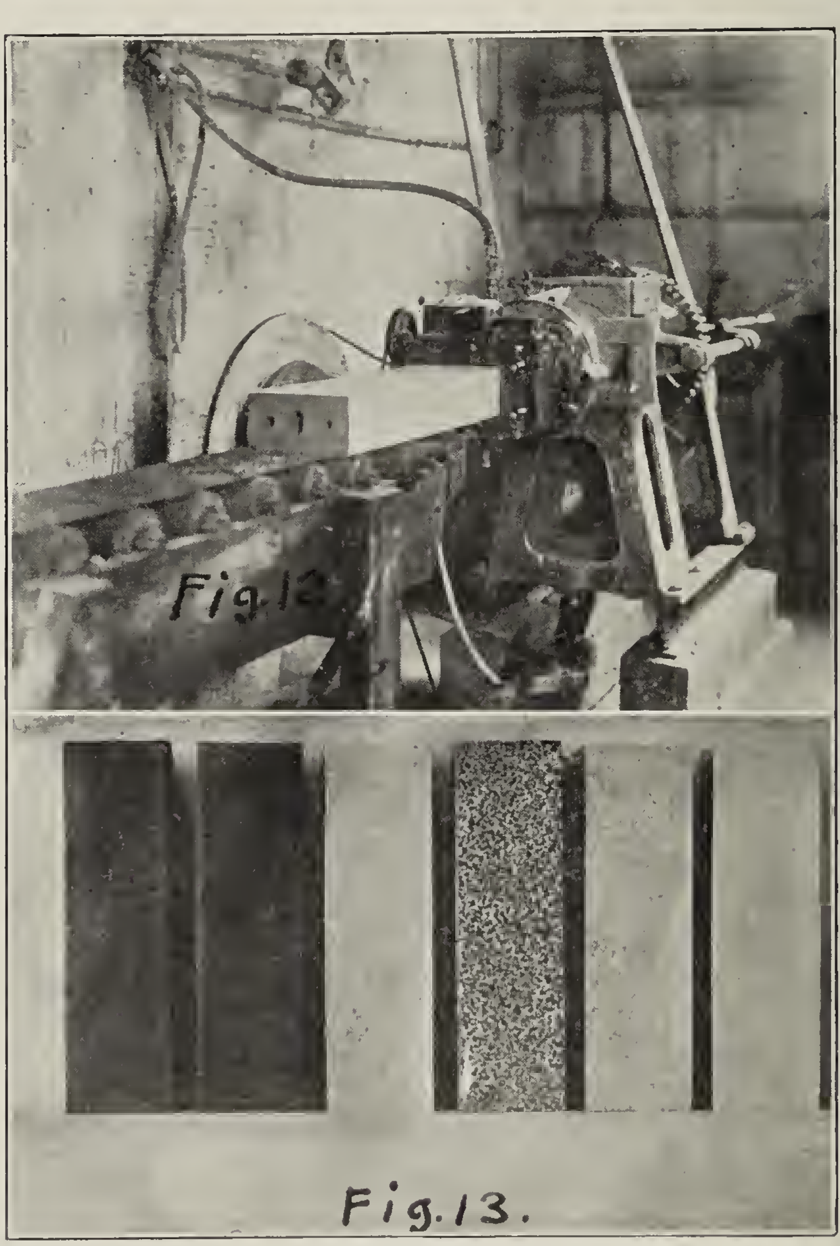
In order to provide for lubrication it is necessary to make the die in sections or scales, so that the lubricant can pass through and moisten the contact surfaces between the clay and the scales. For this purpose, two or more scales are necessary, a larger number being preferable.

By making extensive experiments in applying lubrication in different ways the best results were obtained by the following method: Paper gaskets scant one-thirty-second of an inch thick are placed between the scales. The gasket nearest the intake die opening is cut out at the top as shown at A in Figure 8. The other gaskets make the contacts between the scales water tight.

The lubricant under sufficient pressure can pass through at A and around the column. In order to provide channels for the lubricant to pass around the column, scales of the well-known "offset" type are used, as shown in Figure 9. The lubricant passes through at A to the offset, or channel B, where it flows around the column. Since the die taper is least at the corners the lubricant under pressure passes forward by way of the corners from B to the offset C in the succeeding scale. Here the lubricant also flows around the column and proceeds in the same manner of successive offsets.

Water as a Lubricant.

When water is used and the die is lubricating under proper water pressure and volume a little water can be seen oozing out at the corners of the die. If the water is admitted to the die under too low a pressure lubrication is shut off and the column cracks. If the water pressure and volume are too great water is forced into the weakest spots in the column, giving water marks, so that it is essential to provide a suitable pressure regulator for regulating the water pressure to the right degree.



Die for Producing Veneer Brick. Below Are Some of the Brick.

Since the greatest taper of the die should be farthest from the corners and the smallest taper at the corners the shapes of the intake and outlet openings for the rectangular die would be similar to the diagram shown in Figure 10. The position of the observer is behind the die, looking through it in the direction in which the clay is flowing. The outer lines represent the intake opening and the inner rectangle, the outlet opening. A particle of clay moving from point A of ingress to point B of egress passes on the line of greatest

SHOWING METHOD OF REDUCING LAMINATION

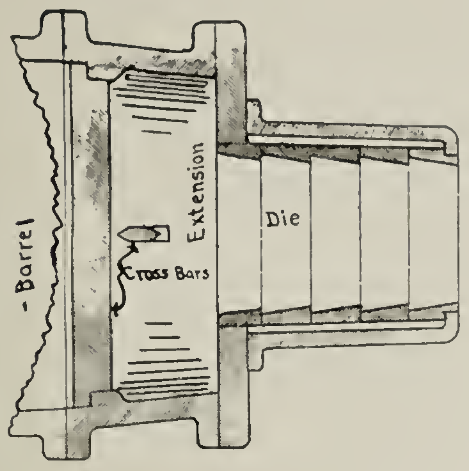


Fig. 4

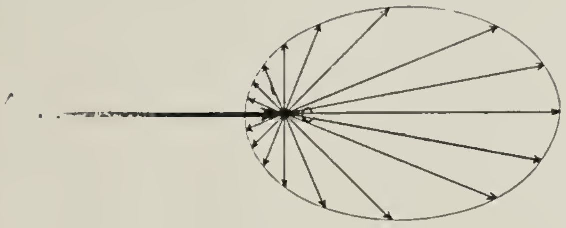


Fig. 5

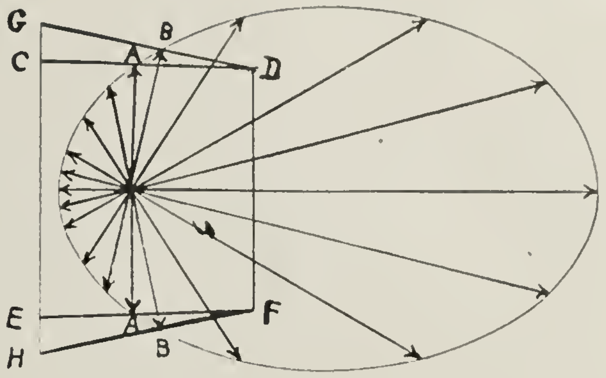


Fig. 6

taper, while four clay particles, one moving through the die at each of the four corners cccc would be in parallel motion along lines of least taper. As the clay moves through the die each successive scale acts upon the forming column and gradually changes it from the form it takes on entering the die to the final form on issuing from the die.

The pressure of the clay is greatest along the greatest taper line, AB, consequently the water would flow forward along the lines of least taper at the corners to the succeeding offsets in the scales, each offset serving as a reservoir to hold some of the water. On removing a die from the machine and carefully cleaning out the clay the offsets of the scales were found to be filled with a soft, plastic slip, which is the real lubricant.

Dies have been in use for years which are built on taper lines directly opposite from what they should be. A working inspection of such a die showed that the lubrication did not take effect from the intake opening up to a point within one and one-half inches from the delivery end of the die. The die for about four-fifths of its length operated as a dry die, the lubrication becoming effective at a point just before the column issued. The form of inlet and outlet openings of this die are shown in Figure 11. The greatest taper is at the corners along the lines EF and the smallest taper farthest from the corners, at D.

A brick plant in Illinois built a die which was designed with inlet and outlet openings along lines illustrated by Figure 10, providing forced lubrication effective at a point within one and one-half inches from the intake die opening. This die was tried out against a die which had been in use and was built along lines shown in Figure 11. These tests showed that the new die increased the output over the old die by more than 22 per cent.

Quality of Ware Depends Largely on Die.

Improvements in die construction and lubrication not only mean an increased molding capacity, but also an improvement in quality of the product. This is especially true in the manufacture of paving brick. When the lubricating fluid is insufficient or its pressure too low the column cracks at the corners. When the cracked portion of the column is returned to the machine it represents a decrease in capacity.

Seldom are the brick rejected which are cut from the cracked portion of the column, but are allowed to pass on through the repress, where oil gets into the cracks and prevents them from healing. The brick pass on through the dryer and the kiln and still the flaws remain, though they have been partially obscured by the "slicking" action of the repress.

The awakening of interest in building brick not only will stimulate a demand for a better made brick, but will bring out all the different colors and textures possible of production from the natural clays. Besides the natural colors and textures the face of the brick can be coated or veneered with an artificial mixture by means of which it is possible to obtain almost any color, from white to black, and any texture, from dull to a glassy surface. Porcelain-faced brick, glazed brick and enameled brick have been made for years, but their sale has been limited, due principally to their high cost of production and consequent high cost to the builder. There is unquestionably a demand for these brick and it is up to the brickmaker to provide means for producing them at a much lower cost, so that a larger number of builders can afford to use them.

In the old method of making veneered or enameled brick the veneer or enamel mixture is applied to the face of the brick by hand, requiring from three to six handlings for each brick.

Several patents have been granted on machines for eliminating hand labor in applying the veneer, but the majority of them have been crude in their construction and imperfect in their operation. Figure 12 shows a die for producing a veneered column of clay in one operation. The veneering mixture is placed in the hopper at D. A shaft provided with blades carries the veneer mixture downward and forces it through slots in one of the scales to the interior of the die. When the veneering substance comes in contact with the clay in the die it is "knit" or welded to it by pressure as the clay and veneer pass through the succeeding scales to the mouth of the die. The column is wire cut and the brick dried and burned in one fire. In order to give a uniform thickness of coating, mechanical means are provided for controlling the feed of the veneering at a rate proportionate to the speed of the issuing column. The feed of the veneering is operated by a belt driven from the carrier table, hence the feed is automatically controlled.

Figure 13 represents some of the brick which have been made on this die. The first brick is coated with a mat glaze of soft texture of a peculiar light green shade. The glaze is composed of seventy-two parts of the clay from which the brick is made, twenty-six parts carbonate of lime and two parts barium carbonate. The cost of the ingredients in this glaze is a little less than 15 cents per thousand brick.

The second brick has a rich chocolate brown mat face. The cost of the raw materials in this glaze is approximately 18 cents per thousand brick.

The third brick has a white unglazed china or porcelain facing, the raw materials costing about 52 cents per thousand brick.

The face of the fourth consists of a speckled porcelain veneer and the fifth a light slate gray porcelain. No. 6 is a white enamel which will stand the ink test and which will safely carry a guarantee that the enamel will not shell off or crack from natural causes after the brick have been placed in the wall.

WORLD'S FINEST TEMPLE MADE OF CLAY

At Cost of More Than $500,000 Mystic Shriners Erect Enduring Home—Medinah Temple, Notable Example of Modern Adaptation of Arabic Architecture

By WARFIELD WEBB

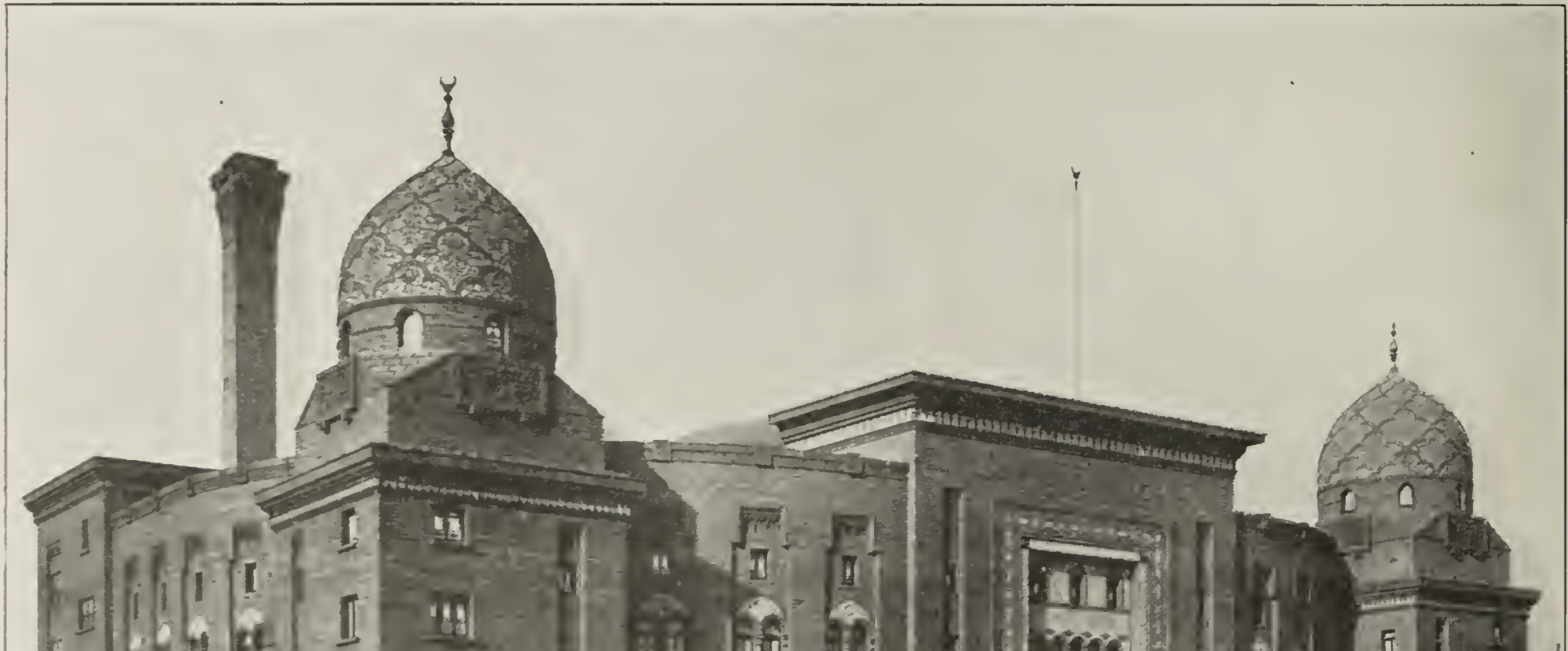
THERE are continual evidences shown of the faith that Chicago has in burned clay products, and many of these rise as monuments to the greater glory of her beauty, and show the artistic results that are possible with these materials when placed in the hands of men who have the power to create and bring their ideals into realization. There are many of these examples, but none that has arisen in late years surpasses in strength, beauty, architectural art and charm that of the new Medinah Temple, just completed at Cass, Ontario and Ohio streets, which cost more than $500,000.

One of the interesting features to "Brick and Clay Record's" readers in connection with this notable structure is the fact that it is in reality a clay monument. It is builded of burned clay, chiefly of fireproofing, architectural terra cotta, face and building brick and ornamental tile. In addition to its absolute fireproof construction, this building also presents, from an architectural standpoint, many unusual points of beauty, and it is conceded to be the finest Mystic Shriner's temple in the world. That burned clay has been a prominent factor in producing this result, is much to the credit of the manufacturers of the splendid materials that entered into its construction.

The location is ideal, and commanding as it does, three street views, the building lends beauty and adornment to that portion of the city. It has a frontage on Cass street of 218 feet, and 150 feet on both Ontario and Ohio streets. The style of architecture is purely Arabic, and the decorations are in keeping with this quaint revival of ancient and historic design, which, in its Oriental splendor, is in keeping with the ancient origin of the order.

The building is four stories high, with ample basement. The base is of dark red granite, and the remainder of the structure is faced with buff wire cut iron spot face brick, with a goldenrod matt, and deep brown terra cotta trimmings. The face brick, of which about one quarter of a million were required, were furnished by the Chicago Hydraulic Press Brick Co., and were manufactured at Roseville, Ohio. The bond is used in such a manner as to produce a Maltese cross effect, the brick, at a distance, resembling blocks rather than the regulation size brick. The contrast of the brown terra cotta trimming with the buff brick is most pleasing and restful to the eye.

Over the several doorways and on the cupalos, polychromo terra cotta is used, the color effects being most wonderful. The terra cotta, which was furnished by the Midland Terra Cotta Co., of Chicago, was designed in



Medinah Temple, Chicago, Ill., Splendid Type of Brick Architecture—A Model in Burned Clay Construction.

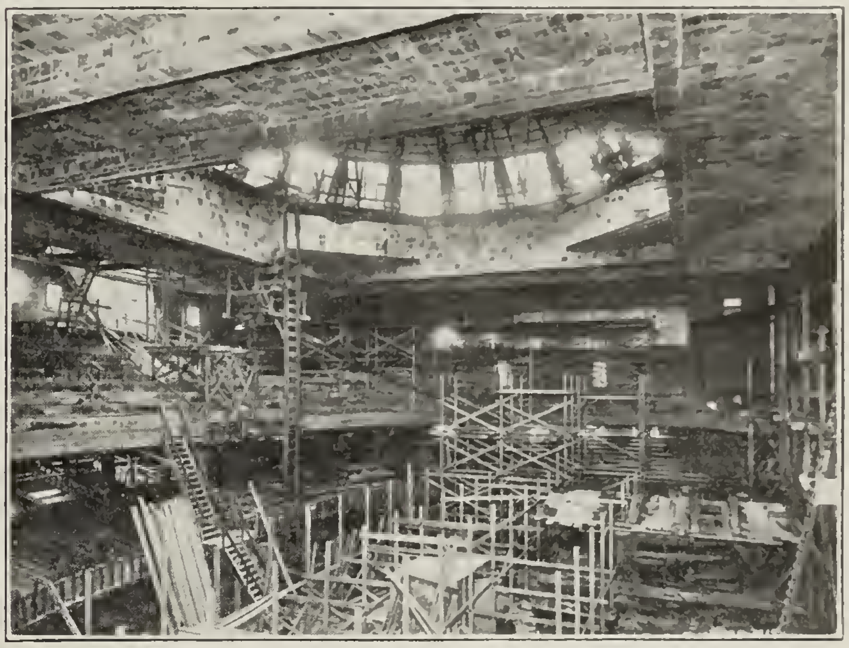
keeping with the Arabic style of the building, and the quaint patterns used on the towers or minarets add an old-world effect to the whole.

All the main entrances, of which there are five, are finished in ceramic mosaic tile, in dignified and chaste colors. On the walls there is a wainscotting of Trenton square tile, in a delicate green on the Ohio street side, and a light brown on the Ontario street side. The floors of these two rotundas are also of ceramic mosaic tile in neat designs. From the main entrances, rotundas lead to the two parlors, the floors of which are covered with a flint tile, of pure white and black squares. On the Ontario street side, leading from the parlor, is the lounging and smoking room, the floor being also of flint tile in red and white.

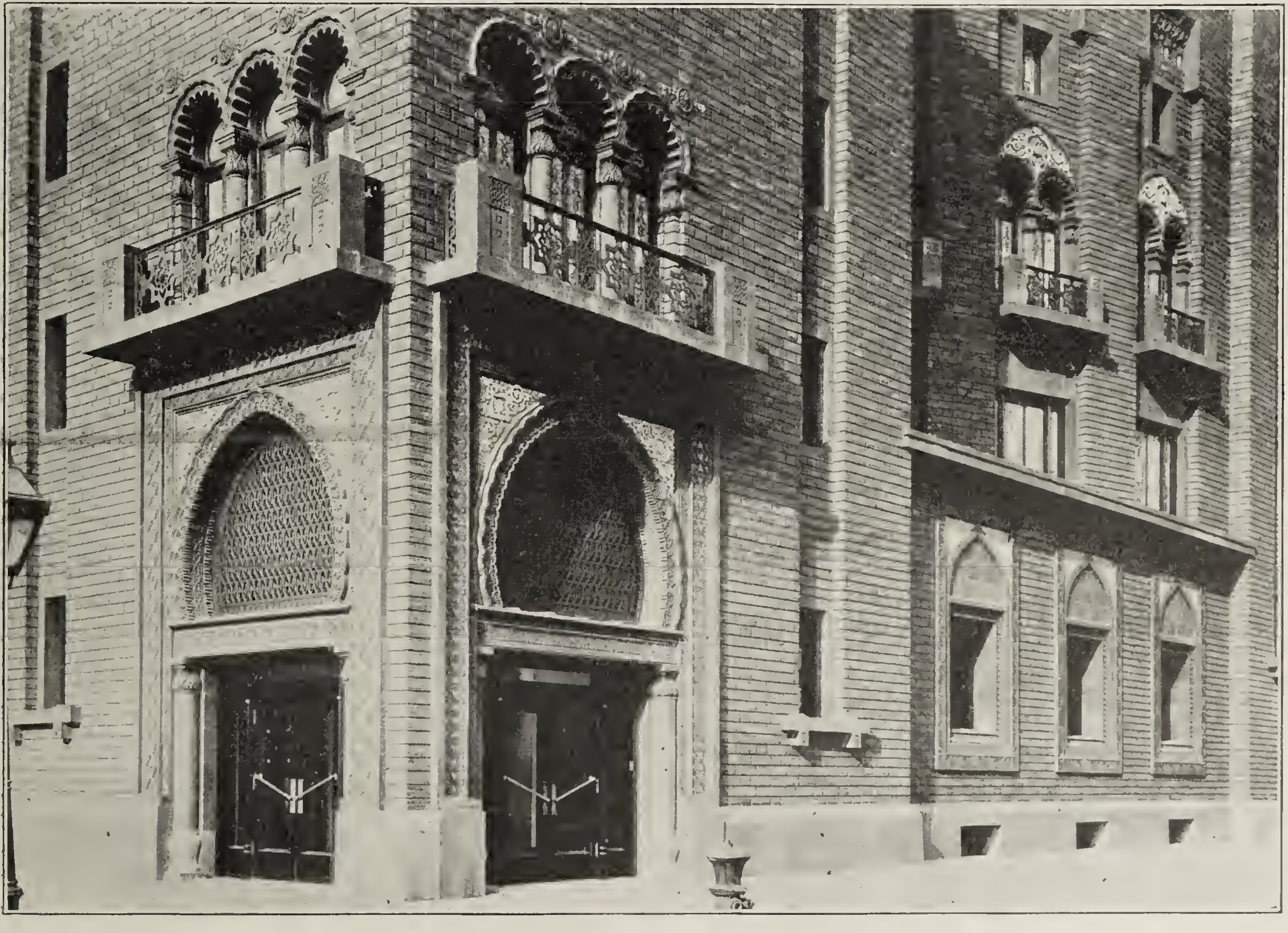
From the main hall, passing through genuine mahogany doors, one enters the immense auditorium, lower floor and two balconies, with a seating capacity of five thousand. There are some new features in the construction of this portion of the building that are out of the stage, with the apron, is seventy by seventy feet, being larger than the Drury Lane theater in London, which is larger than the Auditorium theater in Chicago.

The immense dining room, seating 2,500 people, and the kitchen and serving rooms are located in the basement. A portion of the former, 70 by 100 feet, can be used for dancing. The floors of these rooms are of terazo, and the toilets, on this and other floors, are finished in enamel tile and hexagon white tile. The effect of the whole in most pleasing, giving one the assurance of sanitation, cleanliness and safety against fire. The building has been made entirely fireproof by the aid of burned clay materials. The arches are of hollow clay tile fireproofing, furnished by Egan and Co., Chicago

The roof of the temple is of clay tile, covered with felt, making it both water and fireproof. There were more than three million, two hundred thousand building brick used in the construction of the building, these being supplied by the Curtis Brick Co., Chicago. Clay materials have been used wherever possible, and Mr. Harris W. Huehl, of Huehl and Schmid, the architects, stated that in reality it was planned to be and virtually is a clay structure.



Interior of the Coliseum, Showing Use of Fireproofing.



Showing Detail of Brick Work and Terra Cotta Trimming of New Medinah Temple, Chicago.

Mr. Huehl, who is a past potentate of Medinah Temple, gave much of his time toward making this the ideal structure that it is, and to his work and watchful care much credit is due. He stated that there were, in reality, over forty kinds of tile used in its construction.

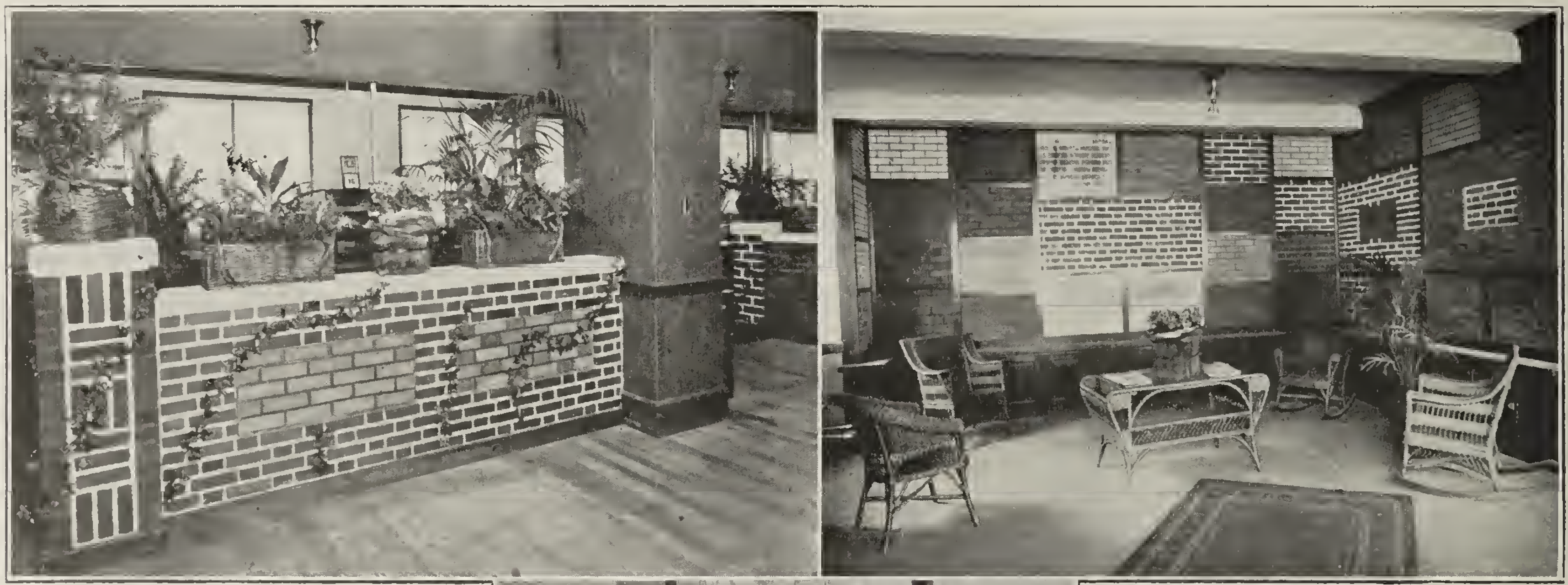
The Medinah Temple stands as a monument to the burned clay industry, and is a credit to Chicago and its builders. It is a lasting example of what can be accomplished by the use of clay building materials and marks a step forward in the direction of fireproofing that will be a guide to others in making their plans. The building was formally dedicated on October 30, but it was not entirely completed until early in December. This building will be used by the Shriners of Chicago instead of the old temple that stands at Dearborn Ave. and Walton place, which will be occupied by the Oriental Consistory.

OMAHA ARCHITECTS ATTRACTED BY BRICK DISPLAY

OMAHA architects are loud in their praise of the effective display which the Sunderland Bros. Co. has arranged in its new offices, which occupy the entire third floor of the State Bank Building, Omaha, Neb. They declare it will now be an easy matter to select brick, as they are shown in every variety, laid up with all kinds of bonds and mortars.

A recent visit to the new quarters showed that the company has arranged something new in the way of partitions for a part of the offices. The building material and specialty department is separated from the rest of the offices by a garden wall effect, built of various kinds of brick handled by the firm. Ivy growing on the wall adds much to the general effect.

The brick display room occupies the north wing of the L-shaped office, the total area of which is approximately 6,000 square feet. The space devoted to brick is lighted from the west and north by natural daylight, and artificial light may be supplied by concealed globes which will illuminate any set of panels desired. The usual method of panel display has been adopted, with this difference: that the brick are laid in actual mortar, the same kind of brick being used repeatedly with different mortar joints or with different bonds. The panels are separated by wooden partititions trimmed in oak and so that panels may be removable individually, when required. Beneath each set of panels is a storage closet to hold samples of the brick displayed immediately above.



Several Views of the New Office and Display Rooms of Sunderland Bros. Co., Omaha, Nebr.

Additional display has been gained by the use of garden walls, faced on both sides with brick, showing straight work or recessed panels coped with stone and decorated with artificial ivy. These garden walls are used to separate spaces devoted to different departments of the organization.

The brick line of the Sunderland Bros. includes the products of kilns located all the way from Pennsylvania to Kansas. The opportunity for varied textures and colors which this variety affords gives as comprehensive and beautiful a display of face brick as may be found anywhere west of New York.

A welcoming touch is given to the rooms by the use of wicker furniture and plants.

At the office "warming," from two until ten P. M. on Saturday, November 16th, between twenty and twenty-five thousand visitors passed through the office and had their attention directed to the displays of modern face brick, which is perhaps a record not reached in recent years and not likely to be attained again until the next Clay Products Expositions.

The Sunderland Company has a reputation for progressiveness, and this is very thoroughly demonstrated by the beautiful and very artistic office arrangement described above.

IOWA PLANT PRODUCES LARGE VARIETY OF BRICK

At the edge of the city limits of Keokuk, Ia., on a branch line of the C., B. & Q. R .R., is located the new plant of the Keokuk Brick & Tile Co., which was erected during 1911. The ten acres of land which the company own, are underlaid with about 40 ft. of shale, overlaid with red clay.

The main factory building is a frame structure 300 ft. long by 100 ft. wide, constructed according to the latest improved plans for the manufacture of dry pressed brick. The power plant consists of a 125-h. p. Kewanee boiler and a 90-h. p. Cooper Corliss engine. The manufacturing equipment consists of one four-mold Andrus dry press brick machine, one 9-ft. Scott dry pan, one clay mixer, elevator and clay screen, all the machinery having been furnished by the Scott Madden Iron Works of Keokuk, Ia.

Unloading Coal at Kilns of Keokuk Brick and Tile Co.

The first kiln of brick was turned out March, 1912, and was burned in an up-draft kiln of special design made for the burning of this particular clay. Since that time P. S. Heutel, manager of the plant, has built two of his patented universal down-draft kilns, which are furinshed with a 65-ft. brick smoke stack. These kilns are different from those ordinarily used and are made for the special purpose of bringing out the different colors in the clay for high grade mottled and speckled buff face brick. The company is producing 30 different kinds of high grade mottled face brick, which range in price from $15 to $40 per thousand, and 12 different grades of red brick, which sell for from $7 to $12 per thousand at the plant.

"Back of the Scenes" at the Plant of the Keokuk (Ia.) Brick & Tile Co.

P. S. Heutel, the manager of the Keokuk Brick & Tile Co., while not given to advertising himself, is well known throughout the country as an expert in clay manufacturing and has the distinction of having made three and one-half million brick for the famous Panama canal.

* * *

THE WISCONSIN ASSOCIATION.

Thirteenth Convention of Wisconsin Clay Manufacturer's Association to be Held at Milwaukee.

The Thirteenth Annual Convention of the Wisconsin Clay Manufacturers' Association will be held in Milwaukee, at the Republican House, Jan. 29th, 30th and 31st 1913.

An excellent program is in preparation for the convention. Prof. A. V. Bleininger will give interesting and instructive talks on subjects relating to the preparation and burning of clay products. He will appear under the auspices of the U. S. Bureau of Standards and will go direct to Milwaukee from the University of Illinois, where he will have just finished conducting a short course in clay manufacturing.

There will be a session devoted to fire and liability insurance at which expert representatives of insurance companies well qualified to discuss these subjects will give talks. Prof. E. R. Jones, of the Wisconsin State University, will discuss tile drainage, from the viewpoint of the farmer and the College of Agriculture and the manufacture of drain tile will be discussed by tile manufacturers. There will also be papers by various members of the association on other practical subjects relating to the manufacture of brick and tile. No Wisconsin brick manufacturer can afford to miss the convention this year as it bids fair to be the best ever held in the history of the association.

There are about 80 brick and tile plants in Wisconsin, and at least 75 should be represented at the annual convention. The Wisconsin Association has the reputation for "doing things," and has accomplished much in securing the reduction in freight rates on clay products and it has plans for furthering the clay manufacturers' interests in many particulars and should have the support of all Wisconsin Clay Manufacturers.

"Building Stone and Clay-Products." The architectural profession will be glad to learn of this up-to-date handbook containing standards, tests, and how made, etc., from such a reliable source as Heinrich Ries, Ph. D., Professor of Geology, of Cornell University.

It also contains a list of the recent reliable literature on the various phases of the subject, and a ten-page glossary defining the technical terms and words now in use.

BRICK
CHICAGO
A RECORD OF THE WORLD'S PROGRESS IN THE CLAY INDUSTRY

BRICK AND CLAY RECORD

VOL. XLI. DECEMBER 15, 1912 No. 12

THE SPIRIT IN THE AIR

The spirit of organization is in the air. Turn where you will, you **HEAR** of it. Look where you will and you **SEE** its effects.

Pick up a representative trade paper in any one line of endeavor and you will find it chronicling the organization of a nation-wide association or registering the plans for the same in the industry it represents.

Finger the advertising pages of one of the current fiction magazines—any of them and you see the practical effect of this organization work in the publicity campaign these industrial bodies are conducting.

If one could stand on some lofty peak and with an eye that could take in the view, from coast to coast and from lakes to gulf, he stretched his vision over this broad domain, what a struggle he would see!

The little fruit growers and the big fruit growers in the Far West, banded together in one common cause, would come to view.

Another band of industrial bees—the canners of the nation, would be seen amalgamated in one broad organization to boost and to promote their particular industry.

A further sweep of this far-reaching eye will reveal the great body of agriculturalists forming into battle line, the iron sewer pipe fellows, awake and presenting a united front, the vast army of skilled and unskilled labor massed together in one compact, fighting body—in fact; wherever you see human endeavor the spirit of organization will be manifested.

And then look at the building and construction industry—the field in which you clayworkers are so **VITALLY** interested. What do you see?

And what is being done in your field, Mr. Clayworker? Turn your eyes to the four corners of the country and you see two **GREAT** armies, **WELL-GENERALED** and up to **FULL FIGHTING** strength. You look in vain for the third, but you see **ONLY** the cement manufacturers and the lumber dealers.

Where is the clayworker?

Over there is a knot of **DISORGANIZED** workers. In another section still another and another and another. Observe the demoralization that marks each little band?

Those scattered little armies are **CLAYWORKERS.**

They are **GOOD** fighters. They **OUTNUMBER** the opposing forces of lumber and cement but, **NOT** being organized, they put up a **VERY POOR ARGUMENT** in this battle for industrial supremacy.

Some day the spirit of organization will **MOVE** this great army of unorganized clayworkers. Some day this divided force will form a solid, compact front and when it does, General Cement and General Lumber will have to be content with a **SECONDARY** position on the battlefield.

But there is **PERIL** in **DELAY.** The enemy may become so thoroughly **ENTRENCHED** in a position of advantage it will take more than just an ordinary **EFFORT** to dislodge it.

THE LESSON THEREIN

Recently there appeared, in this journal, the story of the Newly-Weds, who started out to select material for the construction of a cozy little bungalow.

There was no other reason for printing it in these columns than to bring home to the average brickmaker and the average brick dealer the proof of their somnolent attitude in the battle for business, and we **BELIEVE** we have **SUCCEEDED.**

The Newly-Weds, so the story ran, at first thought **ONLY** of **WOOD** and **CONCRETE.** They had **HEARD,** in a **VAGUE SORT OF WAY,** of

ASLEEP ON THE BATTLEFIELD

GOOD LORD! LOOK AT THE GENERAL
LUMBER
CONCRETE
THIS WAY TO INDUSTRIAL SUPREMANCY BATTLE FIELD
Gen. Clayman
HOW TO ORGANIZE
I. C. Wells

burned clay, but they believed it to be BEYOND their reach—that it was material ONLY for the VERY RICH and NOT TO BE CONSIDERED, and they knew NOTHING of its superiority.

You see they read the magazines and the newspapers and the PERSISTENT ADVERTISEMENTS of the CONCRETE MAN and the LUMBER MAN greeted their eyes on EVERY side, but there was NOTHING about BRICK.

Naturally, when one hears some one thing PRAISED and PROMOTED, day in and day out and NOTHING about another, even though it may be BETTER, he finally gets to the point where he THINKS only of the one that is CONTINUALLY brought to his ATTENTION.

So it was with the Newly-Weds. When they got READY TO BUILD their long-planned little home it was a matter of CHOICE between CONCRETE and LUMBER with them.

And they STARTED out to MAKE this choice.

Fortunately, however, they met a friend one day, who KNEW SOMETHING about brick because he HAPPENED to be employed in an ARCHITECT'S OFFICE.

"If you are going to build, better look into brick first," he advised the Newly-Weds.

But when they asked him WHERE they were to go to OBTAIN the NECESSARY INFORMATION he was STUMPED.

The Newly-Weds were about to continue on their way when their friend recalled having seen a copy of "Brick and Clay Record" on the architect's desk. He sent them to the editor.

Now, of course, the editor could have told them ALL about the good points of burned clay—of its imperishable nature, its imperviousness to moisture, its fireproofness, its heat-resisting and frost-repelling qualities, its economy and the artistic effects that may be obtained by its use.

But the editor did NOTHING OF THE KIND. Here is WHAT he DID do:

He suggested that they go FIRST to the concrete man and then to the lumber man and hear THEIR story. Then, after this, to go to the brickmaker and hear HIS side.

You see the editor was curious to know just HOW each handled a prospective customer.

From time to time this journal had been **CRITICISING** the brickmaker for his **INACTIVITY.**

It had been trying to point out how the average clayworker **HAD FAILED** to take advantage of his **OPPORTUNITIES** as had the concrete man and the lumberman.

From time to time it had urged him to follow the example of his competitors and **CREATE a GREATER DEMAND** for burned clay by **PERSISTENT PUBLICITY.**

It appeared to be a most excellent chance to see if its suspicions were true—that the concrete and the lumber men were more aggressive—that they were more **ALIVE** to **MODERN METHODS** in salesmanship.

UNTO THE LEAST OF THEM.

Let us pause a moment, in the busy rush of business life, at this season of good will, and give a thought to the countless thousands in our land who are suffering and slowly dying from the ravages of the dread disease—tuberculosis. The Red Cross Society is doing a splendid work for humanity in caring for those already afflicted and preventing further spread of the disease, and it should have the hearty support of all good citizens in its work for humanity.

There are upwards of one million cases of consumption in United States and statistics show that one out of every ten deaths are caused by this disease which has taken such a hold that it will take a mighty effort to stamp it out. Funds for carrying on this work are derived solely by voluntary contributions and from the sale of Red Cross stamps, every cent after the actual cost of printing the stamps going directly into the fight on tuberculosis, along the lines most needed. Let us do what we can to further this good work by investing as much as we can spare from our Christmas fund for Red Cross stamps. Let us decorate our Christmas parcels generously with them. They not only convey a message of good cheer but they are the best investment in good health that one can make. Our contribution, be it small or large, will be twice blessed.

Mr. Newly-Wed, disappointed that he had not obtained all the necessary information from this journal, decided he would pass up brick as a prospective material for his new home, but he kept his decision from the editor.

He went direct to the concrete man. He stated his mission.

"I want to know something about concrete construction for a small bungalow home," he told him.

The concrete man lost no time in complying with his wish. He entered into a lengthy dissertation on the merits of concrete construction, laying especial emphasis on its cheapness.

Had he **STOPPED** at this point probably he would not have lost out. But he didn't.

"Concrete," he added, "has all the merits of brick and is cheaper."

You see he **UNCONSCIOUSLY ADMITTED** that burned clay was the **STANDARD** of building materials by which all others must be **MEASURED.**

Impressed very favorably with the arguments of the salesman Mr. Newly-Wed went to the lumber man. The lumber man was a good salesman and he drove home his **BEST** arguments in a most forcible manner.

But he made the **SAME** mistake the concrete man did. He **UNCONSCIOUSLY** used burned clay as a **STANDARD OF COMPARISON.**

Now, Mr. Newly-Wed was a most **OBSERVING** young man. "Why," he asked himself, "if concrete and lumber are better than brick do these people continually refer to brick? I haven't mentioned burned clay."

Mr. Newly-Wed scratched his head rather thoughtfully. Slowly his hand traveled to an inside pocket and he took out the list of Chicago brickmakers and dealers this journal had supplied him with. There were more than a score of names on the list.

"I am going to see one or two of these fellows, anyway," he told himself, and he started out for the nearest one.

Weds in the November 15 issue of this publication will recall the result of his visits.

Mr. Newly-Wed not only saw one or two dealers but **ALL** of them. You see the first one or two he approached showed so **LITTLE INTEREST** in him, it **PIQUED** him.

Then he decided to visit every dealer on his list just to see what they had to say and how they said it.

Of the entire list there were **ONLY ONE OR TWO** brick dealers that actually put up **ANY** sort of argument in favor of the material they were **TRYING** to sell.

One dealer even went so far as to advise his visitor that stucco was "**BETTER** for a man of limited means and certainly **CHEAPER!**"

Well Newly-Wed chose brick but it wasn't because the brick dealer **CONVINCED** him. What **CAUSED** him to consider brick **SERIOUSLY** was the fact that its foes used it as a **STANDARD** of comparison.

With this awakened interest in burned clay Mr. Newly-Wed sat down and read from cover to cover one or two little pamphlets issued by the Building Brick Association of America, which the editor of this journal gave him with the suggestion to "Read them at his leisure."

"I wouldn't use anything but brick now," he told the editor of this journal later, "but for the life of me I can't see why you fellows don't get a move on you and let the people **KNOW** something about brick. Most people will not and do not take the trouble to investigate like I did.''

And who will deny but what he is right—absolutely right?

P. T. Barnum, the keenest student of human nature in modern times, once classed the average man with sheep. ''Just get one or two started and the rest follow,'' he philosophized.

And he was right.

People follow the bandwagon blindly. They do not know why any more than does the gaping curious crowds that, seeing one lone man staring into a store window, stop and stare also, struggling and pushing to obtain a better view.

The concrete man and the lumber man have taken advantage of this susceptibility and with a ding dong and a loud hurrah, through a persistent use of printer's ink, have got the crowd following them blindly.

It is up to the manufacturer of burned clay products to change the tide and the effect will be lasting for the people, once they have had the ''Wool pulled from their eyes,'' will be slow to be led astray again.

When do you intend to change the tide?

* * *

THE CLAY SHOW

A representative of this journal has just returned from a trip through the west. Before he left on his tour he recognized the fact, of course, that there was a great interest in the second Annual Clay Show which is to be held in Chicago, February 26 to March 8.

The daily mail showed this, because it brought many inquiries from sources that ignored the first show last year. He was not prepared, however, for the enthusiastic reports he received in Illinois, in Missouri and in Kansas, the three states visited.

Manufacturers who last year remained at home because they felt the exposition would **NOT** be a success, have learned of the big time those who attended had.

They have heard from enthusiastic visitors what a **TREMENDOUS** success the show was—how thousands and thousands were drawn to the Coliseum who never heard of clay products before and of the great harvest exhibitors reaped from this publicity work.

Judging from the pulse of the clay workers in the three states mentioned, Secretary Hopley, of the exposition, who predicts an attendance of more than a quarter million at the second annual show, is not going to be far off in his forecast.

And the attendance is not only going to be **FAR GREATER** than last year but the **LIST** of **EXHIBITORS** will be more than **DOUBLED**, if present space allotment are to be taken as contrast criterion.

Secretary Hopley's applications for space, he says, are **MORE THAN DOUBLE** the applications received **THIS TIME LAST YEAR** and his reports from his field workers indicate that this same increase will continue throughout the period of allotment.

The Exposition deserves this support and it is encouraging to see that it is receiving it because it proves the clay manufacturers of the country are getting some ginger into their system and are casting aside the cloak of selfishness and are beginning to look upon matters in a broader-minded way.

* * *

THE ANNUAL SHUT DOWN

This is the season when clay plants in many of the northern states begin to figure on the annual shutdown.

Another six or eight weeks will find idle machines in thousands of brick and tile yards.

Here and there, in more fortunate localities, frost and the approach of freezing weather **WILL HAVE NO TERRORS** for the clay product manufacturer.

But, before the New Year rolls around the great majority of plants will be silent and the owner will begin his inventory.

This has been the custom ever since modern necessity **DEMANDED** clay products in such quantities as to class the industry as one **WORTHY** of being classed.

Plans for the next season's work will soon be laid. The old machinery will be overhauled. Some of it will be discarded because it has served its usefulness and is now an expense rather than a profit earner. Some of it will be patched up for another season's duty.

Many of the clay product manufacturers will follow the line of **LEAST** resistance and permit the annual cleanup to **DRAG** until the **LAST** minute.

Many will enter into plans for the coming season in a **HAPHAZARD** manner, remodeling and repairing here and there where the requirements are the most prominent and **SKIPPING** those places where a **MAKESHIFT** will answer.

Others will use a little more **FORESIGHTEDNESS** and go about the matter in a businesslike manner.

Which class do you belong to, Mr. Clay Manufacturer?

Will you be in the list of the **GREAT MAJORITY** and **TRUST TO LUCK** or will you be found with the **MINORITY** who will use **SYSTEM** and plan with an idea of making their product next year at a lower cost than they did this year?

TRUE STATUS OF NEW YORK BRICK CASE

May Be More Than Two Years Before Prosecution Begins, If Indeed, Senator Rose's Aggregation of Gotham Distributors Ever Are Haled to the Bar

By ALLEN E. BEALS

THE story is told of two jealous suitors, each taking out injunctions restraining the other from marrying the lady of their unanimous choice, until one went into his physical and mental dotage and the other waxed so full of years and fatness that the lady in question refused him, when he did pop, and selected for her spouse an innocent bystander with six little bystanders to boot. This seems to be the ultimate outcome of the inquiry being conducted in New York into the legitimacy of the Greater New York Brick Company, the godfather of about seventy per cent of the North river cohort of brick makers.

The lady in the analogy is the brick producing aggregation up the Hudson. The suitor of the first part is impersonated by the dealers and brick retailers in Manhattan and the lesser boroughs comprising the bailiwick of Knickerbocktown, while the wooer of the second magnitude is the youth Gnybco, whose sire is no less personage than Senator John B. Rose with as brilliant a galaxy of progressive uncles as ever an ardent youth could have. The party of the first part alleges that the youth Gnybco is too grasping in his disposition, that the said party of the first part had first option on the sofa, with the winsome woman in the case and that, in short, Gnybco was a base usurper and trampled under foot the sacred rules of courtship etiquette as promulgated, not only by Mrs. Grundy, but by Mr. Sherman, he of Anti-Trust fame. Hence, Gnybco, in the estimation of his rival suitor, should not only be prevented from aiding and abetting a jilt on the part of the said lady on the shoulder of the said party of the first part, but he ought to be jailed, darn 'im.

The party of the first part, soon after the tiff began, a year ago last July, when Gnybco first formally announced his engagement, started a civil action right in the home town of the fair maid of the Hudson, but later, realizing the great popularity of the lady in and about her own home town, the relentless party of the first part decided that the best way to bring the dashing rival ot his lady's affections to a proper measure of embarrassment was to start a criminal action in the home ward of his rival, down in Gotham. And so the fight began.

In the meantime the fair lady still smilingly leans upon the arm of Gnybco, but now and then casts sly, coquettish glances first at the established dealer, or the party of the first part, particularly when his pockets bulge with Uncle Sam's long green; and now and then darts entrancing glances in the direction of a certain bystander in the firm of certain well financed independent dealers who, though unwooed, would nevertheless like to be, it matters little whether it be the plutocratic Gnybco or the aggrieved Party of the First Part.

Sifting the Wheat From Chaff.

The first thing that was necessary was to find out whether Gnybco really had done anything sufficiently wrong to be sent to jail for and so the bellicose suitors gathered before the high Magistrate of Gretna Green and told tales one upon the other. Then all the brick handling countryside was called in to find out which was telling the truth.

Although the Lord High Magistrate sat through all the discussion it was necessary after the squabble to give him plenty of time to sift out the wheat from the chaff. But about that time the gunmen in New York, the opium smugglers of Chinatown, the reckless taxicab drivers in New York and the collusion which began to be apparent between the police and the gambling elements, began to deprive the magistrate of even his night's rest, to say nothing of depriving the suffering jurist from delving into the thousands of pages of testimony, part of which would condemn the alleged Lothario into everlasting limbo and the other half of which would place a halo of virtue above him and set him on a pinnacle in the forum.

The Truth of the Matter.

The clamoring friends of the party of the first part entertained mental pictures of the bold, bad Gnybco sitting as the first man-in-waiting to his Royal Nibs, the Warden of the Tombs, ere a twelvemonth eked out its fitful existence, but no! It was nothing but an investigation, to find out whether the lady's affections were transplanted, with or without her consent, and whether the lack of consent of the party of the first part constituted a rawbone theft or a legitimate swipe.

In the meantime, the lady in question is getting old, the party of the first part is bordering upon its dotage, while the crafty Gnybco is waxing fat and cumbersome. But the innocent bystander, with his family of sturdy independent little bystanders, is standing with open arms outstretched toward the shivering spinster and bidding her mother the little brickmaking enterprises that claim the innocent bystander as their daddy.

And the end is not yet. Before the chambermaids in the District Attorney's office begin to tidy the barred apartments for the defiant Gnybco, the Lord High Magistrate must have had time to read the evidence and to decide whether he will entertain a complaint from the party of the first part as to whether Gnybco really is a professional lady lifter and then a complaint must be made. Then the Grand Jury must consider, from the evidence, whether they believe Gnybco took the lady's affections against her will and against the rules and regulations fixed and maintained to govern such procedure. Then the petty jury must find out whether it considers the party of the first part sufficiently aggrieved to have made all the fuss in the first place, and then the case must be brought to trial. By that time the Manager of the Hotel de Tombs will have passed out of office and a new District Attorney will be in office. Then the case must be reviewed and this does not take into account the appeals that may be made, if an adverse decision to Gnybco is handed down.

By that time the fair lady probably will be no longer fair, but only useful as the mother of the little bystanders in question and Gnybco probably will be godfather to the bunch, take the party of the first part in as Great Grand Uncle and the whole kit and caboodle live happily for ever after.

BRICK—IDEAL MATERIAL FOR BAKE OVEN

Enormous Growth of Bakery Industry Provides Market for Clay Products—Modern Bakery and Refractories Consumes Many Varieties of Brick

The modern bakery has grown to mammoth proportions and in its construction, from the commonest type of homely common brick oven to the high-class patented model of the "Big Seven," calling for 60,000 brick, no material can be found to take the place of clay products.

In the following interesting article, Mr. Crain tells how one trial of the cement oven was sufficient to show its utter unsuitability for the purpose and how, after a few weeks' use, it was condemned.

Investigation shows that it will in all probability be two years before the case of the Greater New York Brick Co. comes to trial. There has been a general misconception of the case among Eastern brickmakers and dealers, and Mr. Beals, after an interview with the leading attorney for the brick company, sets the matter right before the clayworking interests in a picturesque way in the following article.

By G. D. CRAIN

DURING the past ten years there has been a greater investment in the American bakery trade than there has been in the automobile manufacturing industry. This shows that, while the manufacture of motor cars is carried on upon an immense scale, the production of bread proceeds along even greater lines—and the corresponding importance of the bakery trade as a consumer of brick and clay products is established.

Brick is an absolute essential of the bakery. The oven can be made of no other material. In this field, therefore, clay products recognize no competitive material. Not only that, but in this particular channel of consumption, only the highest-class brick on the market are consumed, fire brick for the linings, straight hard brick for the shells, radial for the arches and the very finest grades of enamel face for the exteriors. Truly, the baker is a personage of importance to the clay-worker, contributing business to many lines and contributing plenty of it at that.

It is evident that a big field exists in the bakery trade for the expansion of the brick business, as the average bakery extends and improves its resources annually or even oftener, instead of contenting itself with enlargements every two, four or ten years, as do operators in many other lines.

This is due to the fact that the American public is coming to recognize it as an established industry as a source of supply for its bread. This is an entirely new social condition, the result of a few years of arduous campaigning on the part of the bakers, who believe that they are competing for new business, not amongst themselves, but against the housewife, the original home baker. It is a logical one, for the veriest tyro in political economy realizes that distribution of labor resulting in the establishment of industries to furnish clothing, shoes, furniture and food-stuffs is efficient and economical as opposed to the primeval condition when man was his own tailor, cobbler, butcher and baker.

Brick Best Material for Bakery Construction.

In the production of bakery products, brick is its own advocate. It is one of the cleanest materials in the world, and possesses advantages of durability and elasticity, when subjected to extreme heat, which are not to be found in other lines. The requirement of the bakery is that the surroundings be spotless, from floor to ceiling.

Typical Oven Room in Wholesale Bakery.

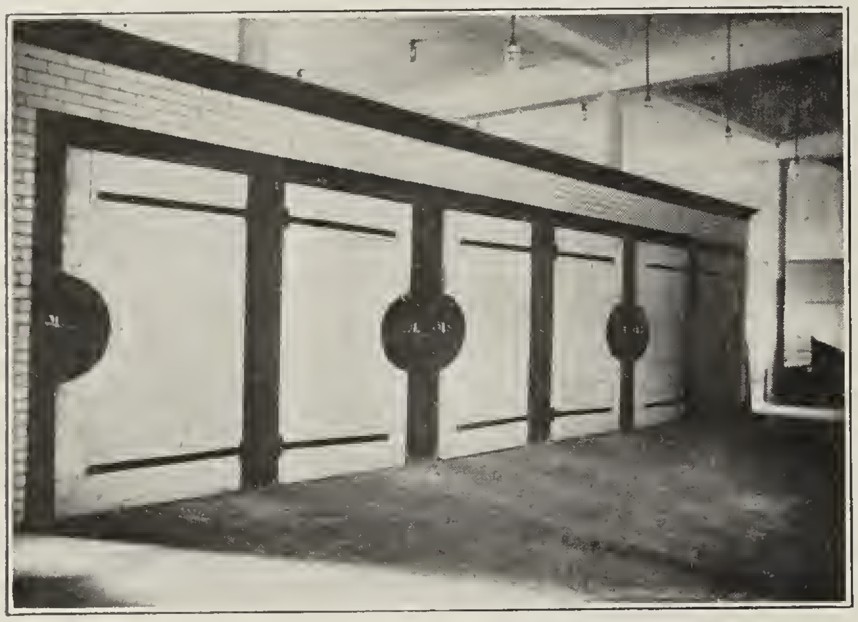
Bread Rack—Showing Oven of Steam Bakery.

Brick is a cheap material for the baker, because it is the only one which will lend itself to his purposes. There are undoubtedly cheaper materials than brick, so far as the original cost is concerned, but they are absolutely impracticable for oven construction. Concrete, as will be established in bakery experiences related further in this story, is nothing more than a calamitous joke. All-metal construction is prohibitively expensive and does not possess the advantages of efficiency to be found in clay products.

If there is one feature of the utility of brick of which the manufacturer may be proud, therefore, it is its all-around adaptability to the uses of the baker. If the clay-worker is to make a success of dealing with bakers, however, developing all the business there is obtainable in his community, he should familiarize himself thoroughly with ovens and oven construction. The best way to do this is to study the two branches of the baking industry, which are widely differentiated in that they do not demand similar types of ovens at all.

It pays the brick manufacturer to know something about bakeries for the simple reason that any business man profits by learning of the conditions to be met by his customers so that he may be all the better prepared to serve them to the best of his ability. Knowledge of what the prospective purchaser wants and why he wants it is equally as valuable as technical data regarding the goods themselves. This is why the story of bread made under modern conditions is an interesting one for the brick manufacturer.

Bakeries are divided into two classes, wholesale and retail. The unique feature of this classification is that the wholesalers do not supply the retailers, as is the practice in any other line of business, but both wholesalers and retailers are manufacturers. The difference lies in the methods of distribution in the two classes, the wholesalers selling to groceries, hotels and restaurants for distribution to the consumer, while the retailers, who often do big business in cakes and pies as well as bread, deal directly with the consumer, selling across the counter or by wagon. It is interesting to note that the wholesale bakeries which, in past years, have dealt exclusively in bread and rolls, are now making a big success of cake and pastry trade carried on along the same mammoth lines which characterize their bread production. Every time a wholesale bread bakery decides to commence the manufacture of white cake or pound cake in connection with the established line, it means more business for the brick manufacturer.


Steam Closet of Large Bakery.

The wholesale bakeries and not a few of the retail shops use patented ovens, which have created big business for the brick men. The difference between the patented oven and that which has for years been a fixture among the smaller members of the trade is that it contains steel instead of brick flues. But it is encased in a brick shell of suitable dimensions, the only patented parts about it being the baking mechanism which is supplied by some oven foundry. There are half a dozen of such foundries in the country, every one of whom, incidentally, is in a position to give the brick manufacturer some valuable tips as to where new work is going on.

Oven in Common Use Not Patented.

The rank and file of retail shops employ ovens which are designed according to the space afforded and from the practical experience of their owners. The baker who sells across the counter, when he desires to construct a new oven, will measure up the shop space at his disposal and then call in a brick contractor to figure on the job. Aside from the brickwork, all he requires is a set of castings and bars for the doors and baking chamber of the outfit, and these may be procured from a near-by foundry or a local dealer in baker's supplies. The homely brick oven which has been doing duty in retail bakeries these many years is not patented, as is its shining brother of the wholesale trade, but is the result of years of evolution in baking methods among the little fellows who are constantly growing bigger.

Whether for wholesale or retail use, however, the baker's oven is built of brick. The patented equipment supplies steel flues ready to be set in the brick-work, while the retail baker places his own brick flues where, according to his experience, the heat will be most effectively generated and evenly distributed. In patented ovens the fire goes around the baking chamber because of the scientific arrangement of flues. The home-made baking chamber, however, contains its fire within, usually with the brick flue or flues in the rear of the compartment so as to produce an even draft and thorough distribution of the heat.

The oven shell, whether for wholesale or retail equipment, is made of hard, red brick. Originally, only 8-inch walls were advocated in the trade, but modern engineering ideas have been more widely adopted and in recent years the 16-inch wall has become almost universal while it is not unusual to find 24-inch thicknesses in the newer shops. The thicker the wall of clay, of course, the longer the interior heat will be retained. And the longer the fire is retained to do its duty, the less it costs the baker to handle his day's bake, as it is called.

The interior lining of the oven, of course, must be of fire brick. All portions of it, coming in direct contact with flame, such as the fire box and the door mouths, must be lined with fire-resisting material. Fireproof tile is used frequently, should the dimensions of the oven adapt themselves better to tile units. With the interior of fire clay and the walls of mud brick, the only remaining portions of the structure are those which show up plainly and which count for appearances. Because of the widespread and imperative demand for cleanliness and the last word in sanitation throughout bakeries nowadays, the oven facings are now often made of white enameled brick of the very best quality.

Examples of modern oven construction may be found in the bakery trade of any city and are very interesting to a brick manufacturer or contractor. There are seven immense wholesale bakeries in the United States which are known familiarly as the "Big Seven." In one of these plants, which bakes 30,000 5-cent loaves of bread and innumerable rolls every twenty-four hours, there are eighteen patented ovens. In each of these about 60,000 brick were used, making the total consumption of brick in this one job well above the million mark for ovens alone, not counting the hundreds of loads delivered for the erection of the plant itself. Battery after battery of ovens in this plant are faced with white enamel brick which cost $67 per thousand.

In the multitude of retail bakeries throughout the country, the average home-made oven is 10 by 12, or 12 by 15 feet in dimension. Anywhere from 20,000 to 25,000 brick may be used in the construction of this sort of equipment. The ceilings of the oven are arched so as to distribute heat as evenly as possible and for this purpose radial fire brick are used. Bakers have experimented with interior oven equipment in the way of steel T-rails covered with fire-proof

(Continued on page 493.)

HOLLOW BLOCKS MAKE ATTRACTIVE RESIDENCES

CLASS HOLLOW BUILDING BLOCK WITH CONCRETE

(Continued from page 460.)

two bodies but got little satisfaction, being assured that until a thorough test had been made of hollow block the present rates would be continued.

Ask "Brick and Clay Record's" Aid.

It was at this point Mr. Engelhardt laid the matter before "Brick and Clay Record."

"You are doing a great work among the clayworkers," he said, "especially in this get-together movement, and it seems this matter is one of vital importance to every clayworker in the country who manufactures hollow clay block, as I understand the classification of the hollow tile block with concrete is enforced, not only in Wisconsin and Illinois, where we have made our investigation, but also throughout the United States."

A representative of "Brick and Clay Record" laid the Appleton case before Mr. J. V. Parker, manager of the Western Actuarial Bureau, with offices at 76 West Monroe street, Chicago. Mr. Parker discussed the matter freely but said he was unable to change the classification until some test had been made to show him that hollow block was worthy of a better rate.

"I believe hollow clay block should have a better rating than concrete construction," said Mr. Parker, "but can't say whether this rate should be as low as solid clay brick construction or not, until I have been given the proper data.

"A building constructed of hollow tile, in the ordinary way, is charged now the same rate as one built of concrete block. Judging from past experiences, although I admit we haven't any definite data to go on, neither one is fireproof in the same sense as is standard brick construction.

"In reference to the case up in Appleton, Wis., I understand the building was to be of ordinary construction—that is, the interior was to be entirely of wood. In case of a fire, where ordinary construction is used, the walls are torn down because the entire weight of the roof and the floors rests upon them. This means, of course, that the salvage must necessarily be small, because the block cannot be used again, and this is a matter that must be considered by the insurance companies.

"Personally, I am of the opinion that a building to be fireproof must be constructed of re-inforced concrete or of brick with steel construction. If a building is made of the latter material—clay brick, in nine cases out of ten the walls remain standing and some salvage can be realized on them. This is not true, of course, with even re-inforced concrete, because of the nature of the material.

"In using hollow clay tile as an interior finish, with a curtain wall of the required thickness, built on a steel frame, it is accepted as fireproof.

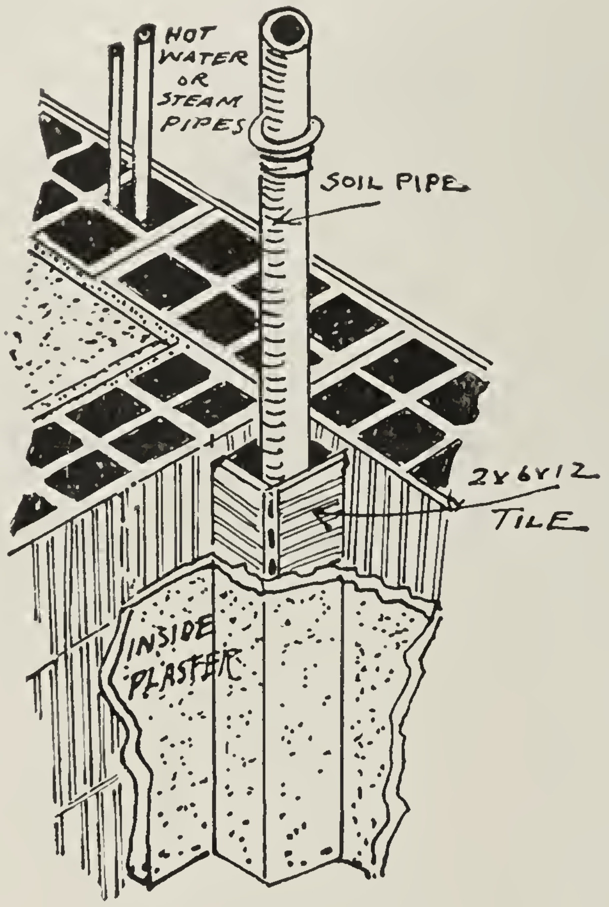
"There is another point about hollow clay blocks and concrete construction which must be considered. It is held that both will fall from their own weight, when the floors and the roofs give away, they even crumble in many cases while still supported by the floors and the roofs. You see they crack and crumble under intense heat."

The representative of "Brick and Clay Record" took exceptions to Mr. Parker's statement that hollow tile block cracked under heat and pointed out to him that this form of material was made from the same material that brick were made from—burned clay—and that it had been proven beyond all doubt that burned clay brick were absolutely unaffected by fire as they already, before leaving the kiln, had been through a heat several thousand degrees higher than they ever would be called upon to stand in a building fire.

Mr. Parker admitted that there was little definite data to form conclusions from in the case of the hollow clay block, but said that until such was available he would be forced to hold the opinions he had about clay tile block.

Hollow Block, Coming Material.

"The hollow clay tile block is to be the coming material for the erection of fine dwelling houses," Mr. Parker added, "and I intend to look into this proposition and see if the same rate as that on brick buildings cannot be charged. You see the residence building does not incur near the same risk as a mercantile building as it is not subjected to such a severe heat in case of a fire and besides, in most cases, the fire is discovered in its infancy."



Returning to the subject of the rate on hollow block, Mr. Parker said: "Summing up the whole matter, the only reason we do not make any distinction between the hollow clay block and concrete is because we do not feel either is fireproof and cannot be compared with brick in resistance and durability.

"There never has been any direct test made in using hollow clay block as a fireproofing material and all the information we have from which to make our classification is that so far it has not lived through intense heat. Personally I do not believe there would be any benefit to be derived from a test of hollow block as it certainly never will answer the purposes of brick. And then, too, and this is a personal opinion, even if it is proven superior to concrete the difference won't be worth talking about."

It can be seen from Mr. Parker's conclusions that the hollow tile block manufacturer must take steps at once to have a proper test made of his product, for only through absolute proof will he be able to convince the insurance companies that hollow tile warrants a far better rating than it has, and that it does not belong in the concrete class.

"If a test, such as required by the Underwriters, should show that hollow block is not only superior to concrete but equal to brick," asked the "Brick and Clay Record" representative, "would you submerge your personal opinions and consider a re-classification?"

"Why, of course," replied Mr. Parker. "That stands to reason. As a matter of fact I suggest that you confer with the Underwriters' Laboratories and arrange for just such a test. I am interested in this matter and would like to know the actual truth about the hollow block, because, you know, we know practically nothing so far."

Before seeing the Underwriters, "Brick and Clay Record's" representative went to Mr. Persch of the Illinois Bureau of Inspection to see if the classification used in Wisconsin also applied to Illinois and to ascertain his opinion on the fireproofness of the two materials under discussion.

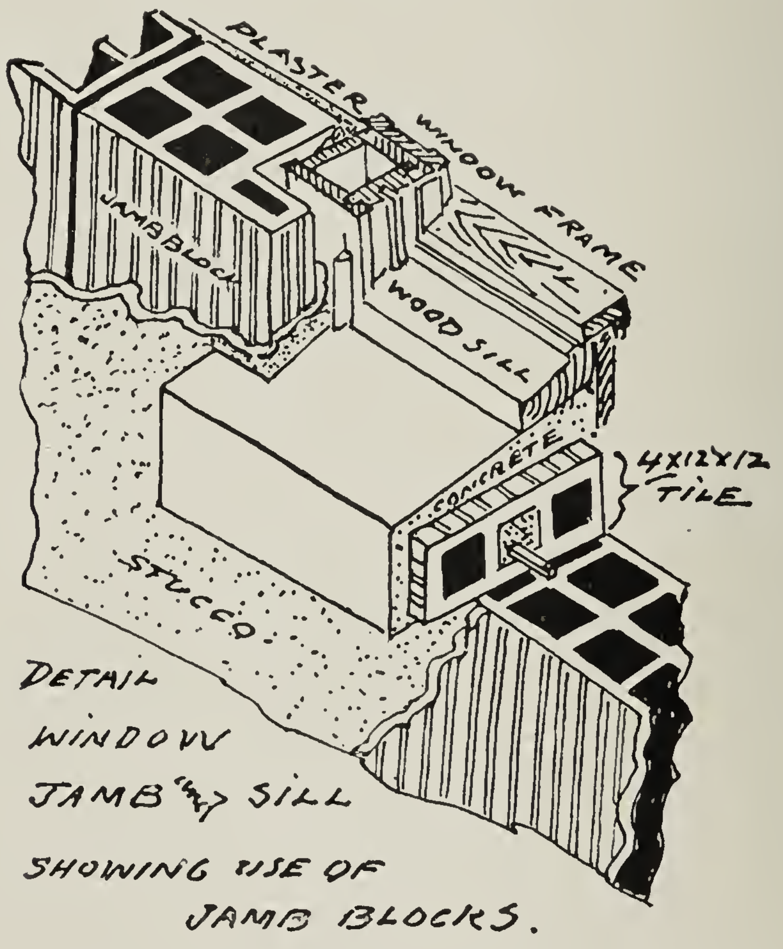
Classification General Throughout the Country.

It was ascertained that the classification was not only applicable to Illinois but also to the entire country. Mr. Persch, too, was discovered to be of the opinion that hollow clay blocks were no better than concrete, but, like Mr. Parker, admitted his conclusions were derived only from what meager information at hand and not from any actual test of the material.

"Hollow clay tile and concrete blocks will both give away under intense heat," declared Mr. Persch. "In my opinion there is only one fireproofing building material and that is brick. Of course, cement is classed generally with brick but no one would ever dream of building a chimney out of concrete, would they?

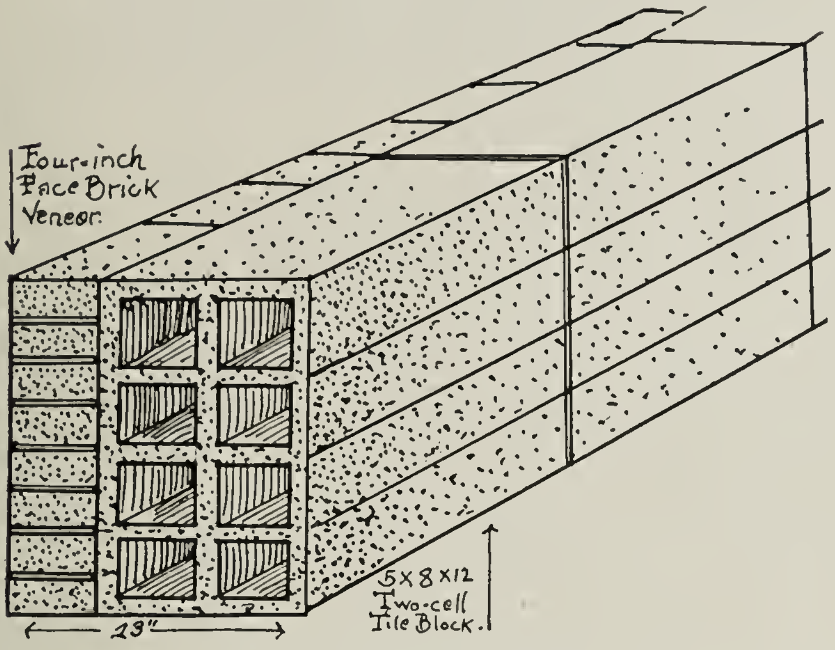
"The walls of a building are not the only thing to be taken under consideration when talking about fireproofing," continued Mr. Persch. "The roof and the interior finish play a very important part. The mere fact that a building is made of brick doesn't necessarily mean that the building is fireproof. This applies particularly to residence buildings. Take, for instance, a brick building with a shingle roof. This is not considered any more fireproof than a frame house—or at least not so much so. The hollow tile block building, with a metal roof or a clay tile roof, in my opinion is just as fireproof as a brick building with a metal roof.

"Now, as to concrete, there are other questions other than its common drawbacks. For instance, I know it to be a fact that gas forms in the cavities of concrete quite often and in case of a fire, this gas explodes, which, of course, is disastrous to the building.



DETAIL WINDOW JAMB & SILL SHOWING USE OF JAMB BLOCKS.

"The different qualities of hollow clay tile manufactured is really the chief obstacle in the way of establishing it as a fireproof material. It is utterly impossible to test a material after it is once in a building and, because of the modern hurry and hustle methods in construction no one has time to try all materials before they are used. Of course, with brick it is different—we know what it is."



Showing Standard Form of Wall Construction—12-inch Hollow Block with Brick Veneer.

From Mr. Persch's comment on the different qualities of hollow tile block made one would take it that some sort of standardization would not be amiss.

At the Underwriters' Laboratories it was learned that no tests ever have been made of hollow clay blocks, but Mr. Robinson, the chief in charge, assured the "Brick and Clay Record" representative that his bureau was ready at any time to make the proper tests.

Further inquiry elicited the information that the initial fee for this test is $100. In addition to this fee whatever expense is incurred must be paid, the extra expense being of an unknown quantity.

That the test should be made, and at the earliest possible moment, is not to be doubted and this journal is taking the necessary steps to bring the matter before the hollow tile block manufacturers of the country and urging them to have the test made. Letters from those interested would not be amiss, and especially from those progressive manufacturers who are willing to contribute towards the fund for making the test.

CLAY RANKS THIRD IN MINERAL PRODUCTION.

Interesting Figures Show Relative Values of Leading Mineral Production.

The clay industry may well be proud of the fact that notwithstanding the decrease in production for 1911, it took third rank in the statistics for the year. The mineral production for the year reached the enormous total of $1,918,184,384, coal leading the list, with a value of $626,366,876.

The following table shows the output and value of the ten leading mineral products during 1911:

Product.		Quantity	Value
Coal:			
Bituminous	short tons	405,757,101	
Anthracite	long tons	80,771,488	$626,366,876
Pig iron	do	23,257,288	327,334,624
Clay products		....	162,236,181
Copper (from domestic ores)	pounds	1,097,232,749	137,154,092
Petroleum	barrels	220,449,391	134,044,752
Gold	troy ounces	4,687,053	96,890,000
Stone		....	76,966,698
Natural gas		....	74,127,534
Cement	barrels	79,547,958	66,705,136
Lead	short tons	406,148	36,553,320

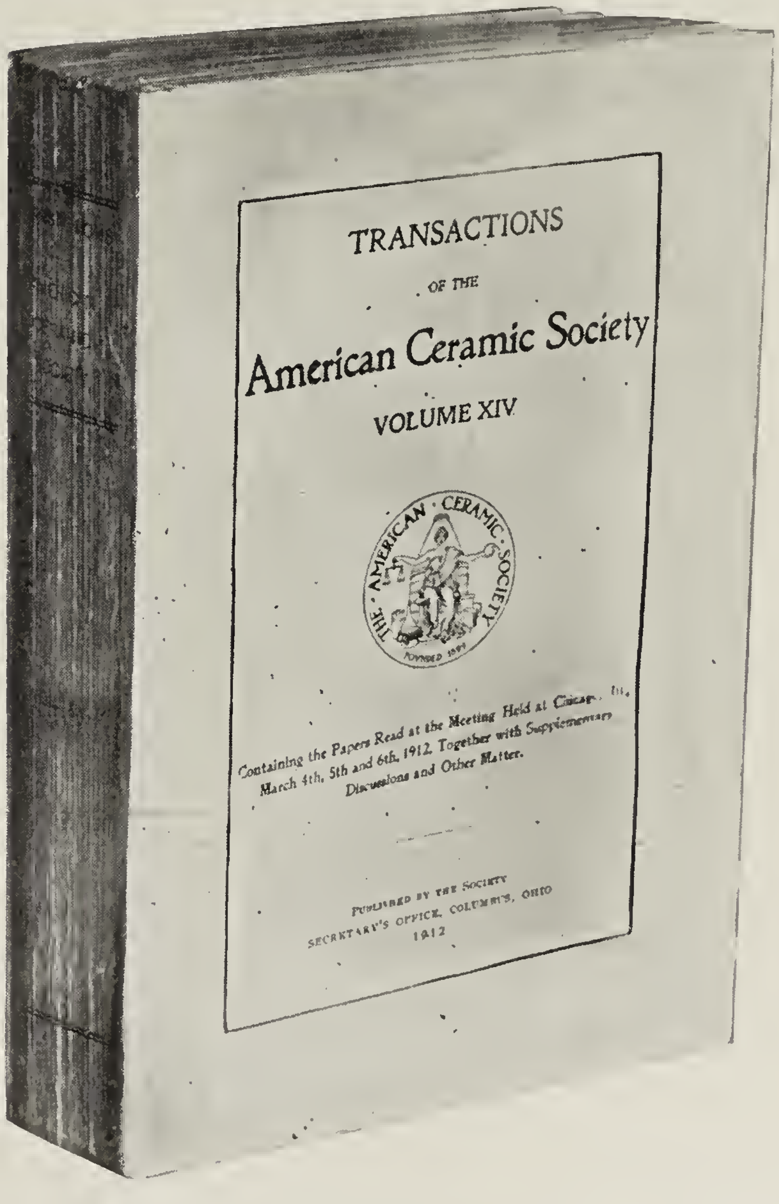
A VALUABLE BOOK.

Volume Fourteen, Transactions of the American Ceramic Society, shows how others solve their manufacturing problems.

This volume is the largest and handsomest of the notable series which the Society has been publishing annually since 1899. It contains seventy separate articles (888 pages), thoroughly illustrated with drawings, photographs and color plates.

Of these articles, one treats of the geology and mineralogy of clays, three of the winning and preparation of clays, four of the manufacturing processes, five of the drying, two of kilns and kiln-design, four of burning and heat measurement, sixteen of the preparation of bodies, glazes and colors, ten of the testing of clays and clay products, nine of the physical chemistry of clays and silicates, two of refractory materials, three of the chemistry of glass and glass manufacture, one of lime, five of the enamel iron industry, and five on general topics. Price, postpaid, $5.50 in paper; $6.25 in cloth. Address, Edward Orton, Jr., Secretary, Columbus, Ohio.

This book and the preceding numbers of the series are not text-books nor encyclopedias on ceramics. They are the records of the studies and researches constantly being made by the ablest, best-trained and most progressive men in the clay-working field in America. If they do not happen to give the exact answer to your particular problem, they will at least show the methods by which other people solve theirs.



TRANSACTIONS
OF THE
American Ceramic Society
VOLUME XIV

Containing the Papers Read at the Meeting Held at Chicago, Ill., March 4th, 5th and 6th, 1912, Together with Supplementary Discussions and Other Matter.

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1912

A MODEL CLAY PLANT AND THE MAN WHO DESIGNED IT

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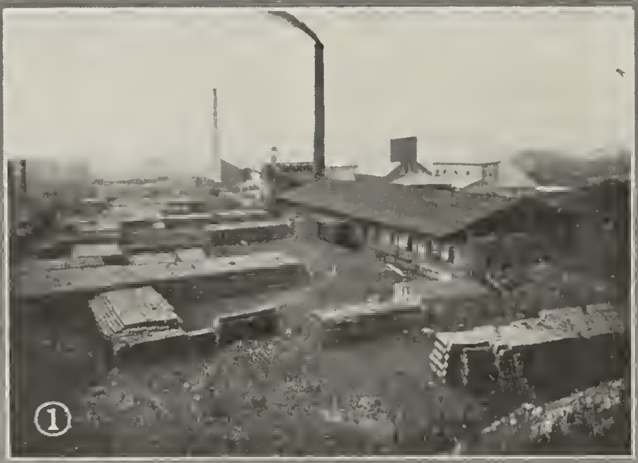
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For description of above see page 481.

MAKES A DIVIDEND—PAYING CLAY PLANT

Young Engineer Rehabilitates Old Yard and Establishes It on a Profitable Basis By Making It Compact

By A STAFF WRITER

THE manufacture of first-class clay products has ceased to be a very serious problem because modern methods and machinery have solved most of the problems. But to manufacture a first-class product and do it at a fair profit is another question and it is to this end most of the attention is being directed today.

Usually clay plants are thrown together in any sort of fashion. The average clayworker figures that if he has the right sort of clay, employs competent workmen, buys the latest and most approved machinery he has done all that is expected of him. He erects an immense shed or structure and sticks his machines into it with little regard for arrangement. He does not seem to consider that a saving of belts and conveyors for years to come may be made by figuring on the location of his machines. He does not seem to figure that economy in labor or in time may be had by getting his plant into a compact form. He does not seem to realize that wear and tear—a big item, may be minimized by proper setting of machines and their protection.

The average clayworker overlooks most of these important items. He sees what his brother has done before him and he figures it is good enough for him. Then he builds accordingly. It is not until he discovers that his competitor is making more profit than he is that he begins to awaken to the fact that something is wrong.

Model clay plants are few and far between. When one is found it stands out with such prominence it is the subject of considerable attention. Just now there is a hollow tile plant in the Middle West that is receiving the attention of the progressive clayworker. It is the remodeled plant of the Ohio Clay Company of Cleveland, Ohio. This plant, until it was rebuilt, was almost everything a clay plant should not be. Despite the modern machinery and the modern methods employed—despite the competent workmen that manufactured the raw clay into what should be money-making products, it was like all the average ones —barely able to make a profit.

Now a Money Maker.

Today, however, it is different. It is a dividend-paying plant and its owners are wondering why they did not long before think of the simple features that have made this thing possible.

The Ohio Clay Company's plant is located half an hour's auto ride from the city. It nestles in the river valley and is surrounded by immense beds of excellent shale. There were no unusual engineering feats to be accomplished to get the raw clay into the plant, and the conditions that existed were just about the same as in the average plant.

The secret of the dividend-paying power rests merely in the simplicity and compactness of the factory arrangement. Couple these two points with solidity and durability and you have the whole thing in a nutshell.

The entire manufacturing end is installed in one building about 30 feet square—a decided contrast to some of the plants that spread over acres of ground, and it is to the arrangement of this building, constructed entirely of hollow clay tile block, and that of the machinery that most of the success of the Ohio Clay Co.'s plant may be attributed.

While the factory arrangement is a strong point in the dividend-paying possibilities of the plant one must not overlook the yard arrangement. The method of obtaining and conveying the raw clay to the machine, and the system in use in the handling and burning of the ware are essential features and without which, the profit would be reduced to an appreciable extent.

Excellent Yard Arrangement.

Suppose you take a trip through the plant with the writer. By reference to the pictures shown on another page the visit will be made easier. In the center of this group of pictures there is one marked No. 1. This shows a general birdseye view of the plant and yards. In the foreground, are the storage yards, the railroad switch-yards, and the continuous kiln—constructed almost entirely according to the plans of the designer of the entire plant, Mr. George W. Denison, the engineer of the Denison Ceramic Engineering Company. There is still another kiln in the background which is not shown very clearly in the photo group.

Just above, in the foreground, may be seen the white walls and roof of the plant proper. The clay bank is located to the right of the plant, in the upper righthand end of the picture.

Now, that we have a general view of the plant let us take a stroll over to the clay bank. In Picture No. 2, one section of the bank is shown, a charge of dynamite having just been set off to throw down the top dirt. In Picture No. 3, we have a closer view of the same bank. A workman can be seen switching a load of shale down the short track to the main line. There is a decided grade to these spurs, permitting the cars to go down by gravity. Owing to the extreme height of the shale bank it was deemed impractical by Engineer Denison to use a steam shovel and he accordingly designed these low cars so that they could be easily and economically loaded by hand.

In Picture No. 4, the electric haulage is clearly defined. This train, consisting of three cars, each of a yard capacity, were especially designed by Mr. Denison and made for the Ohio Clay Company by the Atlas Car & Mfg. Co. of Cleveland. They are not only low to enable a man to throw the clay into them without reaching but have a special dumping device that is exceptionally fine. All the bearings of the cars are of the roller variety, self-oiling and of the cage type. A 3-h.p. Westinghouse 220 volt, direct-current motor propels the train at a speed of 400 feet per minute.

The electric train takes the raw shale up an incline to the grinding room, where, by an automatic dumping device the cars are unloaded into the receiving hopper. Below are the dry pans—three 9-foot pans furnished by the American Clay Machinery Company of Bucyrus, Ohio. These pans have been in continuous service since their installation and have never given a moment's trouble.

It is in the arrangement and location of these pans that Mr. Denison has show how well he has provided for economy in operation and labor. Picture No. 5, gives a pretty fair view of the pans but does not show the solid foundation on which they are built to reduce vibration to a minimum. Beneath these pans, too, is a large chamber so that a workman can reach them readily in case he wishes to adjust or repair the step. The pans are enclosed in a special room, as is the conveying system, thus eliminating the disagreeable and unhealthy dust to be found in the average plant in the room where the men are forced to work.

Notable Absence of Dust.

The tile machine and cutter are located nearby and the absence of dust in the room is noticeable, proving the advantage of having the grinding and conveying system enclosed in a separate room. The machine in use was built by the J. D. Fate Company of Plymouth, Ohio, as was the Bensing automatic tile cutter. Reference to Picture No. 6 shows that Denison interlocking block were being made at the time the camera man made the "snap." Two men can easily take off 150 tons per ten hours from this machine.

An electric transfer car is used in transferring the tile from the drier to the continuous kiln, as shown in Picture No. 7. This car is similar in design and construction to the one used in the shale bank and one man can transfer more cars by the system employed than four men and two ordinary transfers propelled by hand ordinarily do.

Picture No. 8 shows the continuous kiln seen in the distance in Picture No. 1. This kiln has 14 chambers, each being 12x50 ft. (ground plan) and 9 ft. from floor to crown. The 14 chambers are burned in 15 days. The stack to the right is 153 ft. in height and is built of radial chimney brick. This kiln has been burning continuously for three years. The kiln shown in Picture No. 1 which is not quite so large has burned uninterruptedly for seven years. There is still another kiln—a 35 ft. down draft round kiln, but this is used only when the other two kilns are over-crowded.

Electric Current Supplies Power.

Picture No. 9 shows the 20 k.w., 220 volt, direct current General Electric generator which supplies, not only the current for the clay haulage, the kiln transfer and the coal elevator, but also furnishes the lights for the entire plant. It is capable of carrying further at least a 200 per cent overload. In this same room with the generator is the radial drill press, the lathe and a few other minor machines not in view of the camera. All the die and general repair work is done here.

The transmission of the plant was designed to stand severe overloads and to transmit power with the minimum of power loss. All bearings are of the collar-oiling design, insuring stability and perfect lubrication. These are supported on brick piers which were especially built for the strain they are required to stand, and the ample foundations insure perfect alignment of the shafting.

The ground shale from the dry pans is elevated by bucket elevators and discharged on piano wire screens, furnished by the Manufacturers Equipment Company of Dayton, Ohio. The screenings are returned to the dry pans by gravity and the screened shale is conveyed by a flat belt conveyor to the storage bin, which is located directly over the auger machine.

The entire arrangement of the plant is simplicity itself and one is struck by the compact arrangement of every department, by which Mr. Denison has been able to reduce the labor expense materially, and yet secure an increased output and a better quality of ware. Truly the Ohio Clay Company has a model plant—because it is a paying plant.

THE "GREEN" BOOKLET.

The Turntable Question, A Troublous One to the Clay Man, Thoroughly Discussed in a Practical Manner.

The Canton Foundry & Machine Co., of Canton, Ohio, has just issued a new eight-page booklet, dealing with the turntable question which is such a problem to manufacturers of clay products.

In this booklet, The Canton Foundry & Machine Co. describes the construction of its "Universal" frictionless, dirt-proof table, showing illustrations of the three styles made, giving weights, diameters, etc.

This company has been engaged in the manufacture of these turning devices for a number of years, going into this phase of the business originally to secure for themselves a turntable on which they could depend at all times for satisfactory working. When their A. O. Slentz finally developed the "Universal," it was so perfect an industrial turntable that they decided to place it on the market and for the last six or seven years, various manufacturers throughout this and foreign countries have been availing themselves of this remarkable turntable.

The Canton Foundry & Machine Co. receive many letters of recommendation and one enthusiastic brick manufacturer writes: "I have used many types of turntables and have had trouble with every one excepting the 'Universal.' Five years' use does not suggest to us any improvement that could be made on this very remarkable turntable. We did not think it would live up to the many good things said of it but we have found it to be one of those things that work better in practice than theory."

In construction the "Universal" is so made that it is absolutely dirt-proof and its ease of turning is due to the serpentine ball bearing race course on which the table revolves and which sustains the entire weight. In the ordinary turning device, the race course (where there is one) is flat, whereas the "Universal" has (as its name implies), a serpentine or wavy race course which allows the weight to be sustained only by those ball bearings that rest on the high points of the track, which accordingly reduces the friction about 75 per cent.

We would suggest that those interested in securing turntable equipment for their plants, write The Canton Foundry & Machine Co. of Canton, Ohio, for a copy of its new booklet, called the "Green Booklet," which contains full information concerning the "Universal."

ourtesy Improvement Building.

High School Building, Aberdeen, S. D., Constructed of Burned Clay Products.

The accompanying illustration shows the high school building at Aberdeen, S. D., planned by Patton & Miller, Chicago, architects. The building, as described in the "Improvement Bulletin," is constructed of hollow brick furnished by the Heron Lake (S. D.) Brick & Tile Co.,

PLEADS FOR DRAIN TILE STANDARDIZATION

Ohio State Association Urges Importance of Making Uniform Product and Sizes and Takes Initiative

WITH a movement launched to effect the standardization of drain tile as its first important work, the Ohio Tile and Clayworkers' Association was reorganized at the meeting held December tenth and eleventh at Columbus, Ohio.

The sessions of the convention were held in the Ceramic building at the State University, J. D. Rumsey, as temporary president, presiding, George Drennan acting as temporary secretary.

The old-time enthusiasm, which characterized former meetings of the association, was shown by the sixty or more in attendance, many of the original members of the association, which was absorbed by the Ohio Face Brick Association several years ago, being present. The generous sprinkling of new faces however showed that the intervening years have wrought many changes in the personnel of the clayworkers of the state.

The early part of both days' sessions was taken up by the reading of several highly interesting papers, the permanent organization not being perfected until Wednesday. J. L. Child, of Findlay, was chosen president; Professor Orton, of Columbus, vice-president; George B. Drennan, of Plymouth, secretary, and C. E. Neff, of Bryan, treasurer. The executive committee consists of the above named officers and C. W. Wilson, of North Manchester.

Standardization of Drain Tile Discussed.

The movement to bring about a standardization of drain tile grew out of a paper on the subject by Prof. Orton, the head of the Ceramics Department of the State University. The speaker pointed out the many disadvantages of having no set standard for tile and his suggestions were so enthusiastically received a committee was appointed to investigate the subject and report at the next meeting.

The convention was opened Tuesday morning, December tenth, by Temporary Chairman Rumsey. Prof. W. O. Thompson, president of the university faculty, made the address of welcome, which was responded to by Chairman Rumsey. During a delay in the regular program, Prof. Orton gave a short talk on the history of the Ceramic Department of the University.

The appointment of a nominating committee was the first order of business, W. W. Chadwick, of Condit, Gus Wehring, of Ottawa, and John Wilson, of Perrysburg, being selected.

A paper by Ellis Lovejoy, of the Richardson-Lovejoy Engineering Company, was the first on the program, his subject being, "Preparation and Mixing of Clays." Prof. C. B. Harrop, of the university faculty, followed with a paper on "The Designing of a Tile Factory." Both these addresses, which were illustrated by charts and drawings, were highly instructive.

Intermission was taken for luncheon, which was served at the University Inn by the students. Immediately after lunch, a trip around the university grounds was taken, during which an inspection of the ceramic laboratories was made.

I. N. Justice, of the Manufacturers' Equipment Co., read an instructive paper on "Drying of Clay Ware" at the afternoon session, which was followed by T. A. Randall, with an address on "Practical Tile Drainage." These two papers closed the first day's session.

Wednesday, James L. Child, of Findlay, read a paper on "Factory Costs," and Prof. F. K. Fierce gave an interesting talk on "The Coloring of Limey Clays."

At the opening of the afternoon session, the nominating committee made its report and its suggestions were unanimously adopted. Prof. Orton was the first speaker in the final session of the convention, giving some valuable advice on the subject of drain tile standardization.

This elicited considerable discussion and as a result the convention decided to take active steps towards bringing about a systematic schedule of standard sizes. Following the selection of a committee to make investigations, the convention adjourned.

This journal proposes to print in these columns, from time to time, the papers read before the convention, herewith presenting the one read by J. M. Justice as the first of the series. Mr. Justice said:

Thoughts on Drying of Clay Ware.

The practice of drying brick seems to divide itself obviously into two sections: drying without heat or natural drying, and drying with heat or artificial drying. When examined scientifically, it is at once seen that this mode of expression is inaccurate, and that the correct way to describe the two methods of proceeding is:—drying by large volume of air at ordinary temperature, and drying by small volume of air at artificially increased temperature. No drying, i. e., evaporation of water or moisture, can take place without absorption of heat. This fundamental fact is often lost sight of by the practical man, because a large volume of air will yield the requisite heat for the evaporation, without appreciable reduction of temperature.

In order to put the scientific facts with regard to evaporation of water in a manner easily appreciated by the unscientific, it may be stated that one pound of water at 62 degrees F. requires the same amount of heat to evaporate it as would cause 7 1-7 pounds of water at 62 degrees to boil. Yet the one pound of water may be evaporated out of a brick without the brick or water being heated above 62 degrees, but to perform this operation, a certain volume of air must be provided at a rather higher temperature than 62 degrees to yield the requisite heat and to carry off the vapor of water.

The second scientific feature of the phenomenon of evaporation of water is the capacity of air at all temperatures for carrying or containing moisture. This property of air is of the most vital importance in all questions of drying, because on it depends the success of all special methods of obtaining the desired end.

The amount of moisture or vapor which air can carry, varies with the temperature. At every temperature below boiling point of water, or 212 degrees F., it will carry a certain definite maximum amount. When this amount is reached, the air at that particular temperature is saturated; if now the temperature of the air is lowered by giving up some of its heat to a colder body, some of the vapor immediately becomes condensed, forming dew. The temperature of saturation is also called the dew point because of its phenomenon. Ultimately, the colder body, the dew, the air and the moisture in the air, will if undisturbed, all attain one common temperature, and the air will be saturated with the maximum amount of vapor, which it can carry at the lower temperature. Suppose now that the air instead of being cooled, is warmed to a higher temperature, it will then no longer be saturated with moisture, but will be capable of taking up an additional quantity. If then a moist body be introduced into the warmed air, some of the moisture will be evaporated or dried out of it. This will continue until a new condition of equilibrium is obtained. Either the body will be completely dried, or the body, the moisture in the body, the air and the vapor in the air will all attain one uniform temperature. In the latter case the air will be completely saturated with vapor, and incapable of taking up more. Below, is a table giving the weights and volumes of air under mean pressure at a few different temperatures, which will contain, when saturated, 1 pound of water in the form of vapor:

Temperature	Weight of Air	Volume of Mixture
43	178.18 lbs.	2272 cubic feet
52	122.17 lbs.	1595 cubic feet
62	84.79 lbs.	1135 cubic feet
72	59.54 lbs.	819 cubic feet
82	42.35 lbs.	600 cubic feet
102	21.98 lbs.	333 cubic feet
132	8.49 lbs.	151 cubic feet
182	1.402 lbs.	48.7 cubic feet

The striking feature of the table is the rapid decrease in the quantity of air necessary as the temperature of it increases. It also shows that, in the example quoted above, it is only necessary to raise again the temperature of the air to enable it to take up a further portion of water from the moist body. A curious feature in the behavior of vapor and air is the fact that the addition of the one to the other causes but very slight alteration in volume. The air contained in a saturated mixture at mean temperature and pressure would, if dry, occupy 98½ per cent of the space occupied by the mixture. Saturated air is rather less in weight than the same volume of dry air the actual weights of a cubic foot of dry and saturated air at 60 degrees F. under a pressure of 30 inches of the barometer, being 536.3 grains and 532.7 grains respectively.

How Brick is Affected in Drying Process.

It is of importance to consider the process of drying within the brick itself, and to see how it is affected by different influences of material and method and speed of drying.

When a brick is made by the plastic process, the clay has added to it "water of manufacture" in various proportions, according to the nature of the clay and the method of manufacture adopted; in a brick, in a truly plastic condition, this water fills all the interstices in the clay so that no air is enclosed in it, except accidentally. At a certain consistency, such as it has when fit for being formed into a brick, clay is in a pasty condition, due to the particles being more or less close together, and it may be described as being traversed throughout by minute pores filled with water. The finer the clay particles, the smaller and the more numerous the pores. Thus, the purer a clay and the finer its particles, the more porous it is.

At first sight this seems contrary to experience, but it is necessary further to explain that porosity must be distinguished from permeability. The finer the pores in the clay, the more difficult it is for water to pass through them, because of the great resistance which the surface tension of water exerts at the ends of fine tubes. One can test this in a simple manner with fine glass tubes. Take a tube with a bore, say of one-eighth of an inch, and see with what ease one can suck up water into it, and expel it again. Now try the same with a broken thermometer tube and the difficulty or impossibility of doing it will be at once apparent.

A proof that strong clays are actually more porous than sandy ones, is found in the fact that they take a larger percentage of water of manufacture to make them sufficiently plastic for molding. In spite of the smallness of the pores, heat is able to act on the surfaces of the water in the tubes, causing evaporation. Capillary action then commences, and the internal water moves through the pores towards the surface. The properties, then, of a pure clay, are porosity and impermeability. Now as sand or other particles are mixed with clay, so the porosity decreases, and the permeability increases, the relative difference depending on the proportion, shape and size of the particles. The greatest permeability and least porosity are found in clay containing large particles of irregular shape. The projections on the particles catch against one another, preventing contraction of the mass of the earth. The pure clay is not sufficient in quantity to fill completely the spaces between the particles, thus leaving comparatively large channels through which water can pass. The channels are, never-the-less, much fewer in number and less in total volume than the pores in a strong clay.

Cause of Scumming Discussed.

The process of drying clays when made into bricks, varies with these qualities of porosity and permeability. When drying a porous strong clay, the water at first evaporates from the surface and is replaced by capillary action from the interior, the brick contracting by the same amount as the water diminishes. The pores remain all filled with water until the rate of evaporation exceeds the rate at which the pores transmit the water. This point occurs when the clay particles move so much less freely on each other, than the rate of evaporation exceeds in volume the rate of contraction. After the first stage of surface-drying, the exterior of the brick loses water more rapidly than the interior. In the second stage now reached, the pores are no longer filled with water at their outer ends, and begin to form spaces in the brick, filled with air and vapor. Contraction still occurs throughout this second stage until the substance of the clay is so far solidified that the individual particles can no longer slip on each others. The third stage is then reached, in which capillary action and shrinkage cease entirely. Evaporation now takes place entirely inside the brick, and spaces are formed exactly corresponding with the volume of water lost.

In a strong clay, the long duration of the first stage and its accompanying capillary action is the cause of the scumming which occurs in drying. The soluble salts in the clay are held in solution by the water, and are deposited on the surface by it as it evaporates. If the surface-drying is of short duration, the salt deposited is almost inappreciable, but the longer the duration, the more the deposit. Excess of water on the surface of the brick caused by the lubrication of a machne die or a coating of oil, will increase the duration of surface-drying. The effect is frequently illustrated by the marks seen on strong clay brick after burning, where workmen's oily fingers have touched the faces. The coating of oil has lengthened the duration of surface drying where the fingers have touched the brick. In firing the kiln, the soluble salts are largely converted into insoluble ones by combination with the silica of the clay, or by combination with the sulphur in the coal and the alumina of the clay.

This form of scumming can be diminished, if not altogether prevented in several ways, and it would perhaps be of value to mention them at this point. By sanding the surface of the brick a greatly increased evaporation can be obtained in the first stage from the actual surface itself. The effect of this is to form a very thin skin of dryer clay through the many interstices of which the evaporation of the first stage is completed. The salts, instead of being deposited outside on the face, are left for the greater part just below this skin, and are not seen.

By the admixture of a certain proportion of carbonate barytes with the clay when pugging, an insoluble compound is formed with such soluble sulphates as are present, and this consequently remains in the body of the brick. This process has no effect on soluble nitrates and chlorides, which may be present in the clay, and is, therefore, only a partial remedy, depending on the salts present. It is well to have an analysis of the clay before trying this remedy.

Returning now to the consideration of the physical phenomena of drying, it is evident that the same three stages are operative in the case of brick made of permeable, sandy clay. The first stage is, however, much shorter in proportion for three reasons: A smaller proportion of water of manufacture is added to the clay, capillary action is less operative in the larger spaces between the particles, and the evaporation is more rapid in proportion to the shrinkage. The danger of scumming is consequently much reduced, but even with these clays it occurs frequently in the damp, cold weather of later autumn, in out-door drying.

Shrinkage Less with Rapid Drying.

The shrinkage of a brick is also affected by the rapidity with which it is dried, a point which is noteworthy, because of the increasing use of rapid drying systems at the present time. The shrinkage is less with rapid drying, probably because the clay particles do not have time to accommodate themselves so perfectly to new positions in the course of the process. Experiment has shown that on bricks made with a given sample of clay, the shrinkage of one dried in 48 hours was 7¾ per cent. and of one dried in 15 days was 8½ per cent.

In all classes of clay, the brick in the second stage of drying loses water more rapidly on the outside than in the inside, the angles and arises in their turn drying more rapidly than the faces, the consequent shrinking of the outer layer is the frequent cause of cracking, and it is therefore necessary to pursue this stage with great caution, and to effect the drying with air already heavily charged with moisture. It is also for this reason essential to avoid excessive prominence of any part of a shaped brick, and it is advisable to follow the shaping with hollows so as to maintain an approximately regular thickness of material throughout. The frogs or indents on both sides of a common brick are serviceable in drying for the same reason. In a re-pressed brick they serve also the additional purpose of rendering the consistency more even throughout.

The practice of drying as before stated, divides itself naturally into two sections: (1) drying by a large volume of air at ordinary temperature, and (2) drying by a less volume of air at artificially increased temperature. To this may be added a third method in use in the potteries, but not used in brick manufacture, that of drying by absorption.

Evolution of Drying Methods.

The oldest and most used method of drying bricks is by large volume of air at ordinary temperature. This is practiced in a variety of ways, simplest of all of which is open-air drying without protection of any kind.

The next advance in the evolution of brick-drying systems leads into the second main division of the subject, "Drying by smaller volume of air at artificially increased temperature." It is the most important division of the subject, for the manifold advantages of having the drying process under control are evident, and it can be shown that these advantages really out-weigh the disadvantage of the expense of fuel. It is the more intricate division of the subject because of the different conditions under which heat may be applid to drying and the necessity for obtaining the greatest possible efficiency from the fuel or source of heat employed. The problem in itself seems simple, for one is apt to assume that the mere warming say, of a shed, some 10 degrees to 20 degrees above the outside temperature would insure rapid and effectual drying of the bricks, and would not require much fuel. Scientific calculation, however, throws unexpected light upon the subject, and shows the necessity for great care in the arrangement of artificial systems, and for great caution in accepting the statements of interested persons as to the fuel consumed in known systems.

In consequence of the importance of the chief fundamental facts, it is necessary to emphasize here, the statement made that no drying can be obtained without absorption of heat. If hot air is passed slowly over a dry cold brick it will be only slightly cooled, but if it is passed over a very wet brick, it will be considerably cooled. To raise a dry brick weighing 7 lbs. from 60 degrees to 61 degrees F., takes only 1.4 units of heat, but to raise in the same way the temperature of a wet brick weighing 7½ lbs., and to evaporate at the same time the ½ lb. of water it contains, will take 537 units of heat, or nearly 400 times as much. The latter figure represents the heat yielded by the consumption of about ¾ oz. of ordinary coal. Not only so, but the heat has absolutely disappeared, and can only be recovered by condensing the vapor of the water back into water again. For this reason the statements which are sometimes made, that certain drying systems use heat over and over again, and that the heat is not allowed to escape, must not for one moment be credited, although at first sight they may seem to be borne out by the system referred to. It is also very necessary to call attention again to the statements made, of the peculiar property of air carrying moisture in amount varying with the temperature. The table there given shows that air at 82 degrees F. will carry double the quantity of moisture which it will carry at 62 degrees F. Its carrying power is approximately doubled for a rise of 20 degrees. Nevertheless, when once the air at a given temperature is carrying its full complement of moisture, and is saturated, the fact that it feels warm, and is kept warm, does not imply that further drying of bricks contained in it will ensue. It is saturated, and cannot take up more moisture, and it is now necessary to carry off this saturated air by ventilation, and replace it by warm air which is not saturated. It is by a careful adjustment of the temperature and volume of air supplied to a dryer that the most efficient results are obtained, and it is a knowledge of the scientific principles involved that enables the expert to insure these results.

It being demonstrated that to effect drying by artificial means it is invariably essential to provide adequate ventilation and that the ventilation must be effected by means of air warmed above the average temperature of the air outside the dryer, it remains yet to mention two means by which the necessary heat for drying may be provided other than by the warmed air itself. The three methods thus forming the subdivisions of artificial drying may be thus stated:

1. By heat supplied by convection, i. e., by warmed air which is reduced in temperature, and renewed or partly reheated, when charged with moisture.
2. By heat supplied by conduction, i. e., by contact of the goods with the source of heat supply, air only slightly warmed being necessary to carry off the moisture
3. By heat supplied by radiation from the source of supply, air warmed to a moderate temperature is supplied to carry off moisture. The second method was the earliest adopted in practice, a combination of the second and first being best developed, while the first and third separately and in combination are those now most in vogue with varying degrees of success according to the intelligence displayed in adapting them to individual cases. It may be broadly stated that the third by itself or in combination with the first produces the most efficient and successful results, and the general tendency of recent improvements in dryers is towards an unscientific or "Rule of Thumb" application of it. The results arrived at by long and expensive practical experiments might have been long since obtained, if science, in its technical form, had been earlier applied to the solution of the problem. Strictly speaking, the simplest procedure is the method of supplying warmed air, which yields the requisite heat for evaporation, and at the same time serves to carry away the moisture.

OLDEST BRICKLAYER.

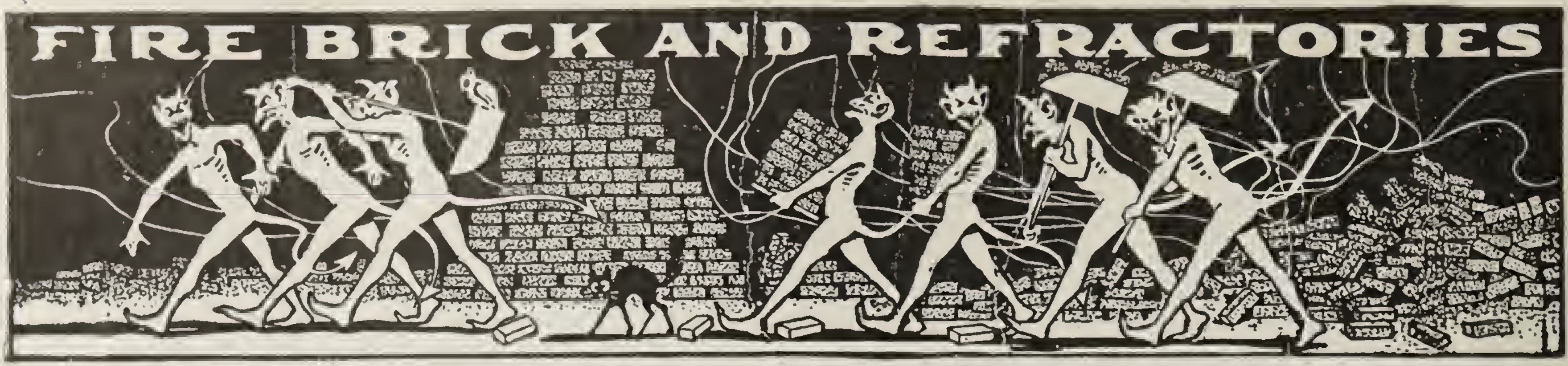
J. F. Youngblood, Saltillo, Tex., who recently celebrated his 108th anniversary, is said to be the oldest active bricklayer in the world. His very name is suggestive of long life. Youngblood in name and young blood in his physical and mental activities have kept him young beyond the three score years and ten.

J. W. Youngblood, Third from the Last, Laying Brick at the Age of 108 Years.

In the illustration Mr. Youngblood may be seen handling the trowel, the building under construction being the library at Sulphur Springs, Tex., where there was a shortage of brick makers and Mr. Youngblood was sent for and pressed into service, and it is said he performed the work of laying the brick as well as any of the younger men on the job.

This remarkable man, who was born in 1804, is in a splendid state of physical and mental preservation. He reads without glasses and takes as much interest in the affairs of the community as though he were young.

FIRE BRICK AND REFRACTORIES



HARBISON-WALKER REPORT.

Official Statement Shows Net Profits for the Year Exceed Million-Dollar Mark.

Following its usual custom, officials of the Harbison-Walker Refractories Co., of the Farmers Bank Building, Pittsburgh, Pa., has sent all stockholders a copy of the annual financial report of the corporation. The annual meeting will be held January 20, and the annual report usually goes forward to stockholders, on or about the first week in December. The report is for the fiscal year ending September 30, 1912.

The report, just mailed, is the tenth annual statement, and it shows that the business of the company has been conducted upon a high business basis.

As has been the custom of "Brick and Clay Record" in past year, the complete financial statement is published as follows:

Earnings, after deducting $281,671.67 expenditures for all ordinary repairs and maintenance, which covers depreciation of plants		$ 1,395,932.68
LESS		
Extraordinary expenditures, being repairs and improvements, increasing the capacity and efficiency of the works	$ 3,858.73	
Charged off for depreciation of mining and tram outfits	37,850.48	
Charged off for depletion of clay, coal and ganister properties	32,533.71	74,242.92
Net profit for the year		$ 1,321,689.76

DEDUCT.

Interest on bonds	$ 60,562.50	
Dividend on preferred stock (6 per cent)	576,000.00	
Dividend on common stock (2 per cent)	360,000.00	996,562.50
Net surplus for the year after charging interest on bonds and dividend on preferred stock, also dividend on common stock, now carried to surplus account		$ 325,127.26

SURPLUS ACCOUNT.

As at September 30, 1911	$ 5,215,060.52
Add net surplus for year, as above	325,127.26
As at September 30, 1912	$ 5,540,187.78

The balance sheet as of September 30, 1912, is as follows:

ASSETS.

Property account (properties and franchises owned and operated by the constituent companies)		$28,548,166.10
Betterments completed		1,374,341.43
Betterments uncompleted		404,734.10
Deferred charges to future operations (Includes clay, coal and ganister outfits ($179,832.29), advanced royalties, stripping, prospecting, uncompleted extraordinary repairs, etc.)		282,984.39
Current assets—		
Inventories at cost	$ 1,374,599.02	
Accounts receivable (Accounts of constituent companies against each other omitted.)	1,486,288.47	
Bills receivable	44,104.88	
Cash	813,540.03	3,718,532.40
Investment securities.		
Investment of reserves	$ 222,000.00	
Own bonds purchased by company and held in treasury	188,000.00	
Other securities	286,807.31	696,807.31
Total assets		$35,025,565.79

LIABILITIES.

Capital stock—		
Preferred	$ 9,600,000.00	
Common	18,000,000.00	$27,600,000.00
Bonds, total issue	$ 3,500,000.00	
Less—		
Purchased and cancelled as per sinking fund requirements, $1,750,000; cancelled in anticipation of sinking fund requirements, $700,000	2,450,000.00	1,050,000.00
Reserves—		
Bond interest and taxes (accrued but not yet due)	17,292.30	
Clay, coal and ganister properties depletion fund	166,550.61	
Sundry reserves	400,038.51	583,881.42
Current liabilities—		
Accounts payable (Liabilities of constituent companies due each other omitted.)	$ 166,838.52	
Pay rolls	84,658.07	251,496.59
Surplus		5,540,187.78
Total liabilities		$35,025,565.79

NEW FIRE BRICK PROJECTS.

Increased Activities in Iron Industry in South Causes Demand for Refractories.

Fulton, Missouri, has been offered a half-million fire brick plant, upon the proviso that the citizens give a bonus of $10,000. Committees are now at work and it is believed no trouble will be experienced in getting the money. High grade clay deposits are found adjacent to Fulton and one fire brick plant is already established there.

Work is under way on the $700,000 fire brick plant at Vandalia, Mo., which was obtained by that city through a bonus of $10,000. It is to employ several hundred men with a weekly payroll of several thousand dollars. These plants will work up the clay instead of shipping it to plants in St. Louis and Kansas City, Mo.

One of the most interesting announcements in the Louisville, Ky., trade is that recently made by the Louisville Fire Brick Works, one of the best known fire brick concerns in that territory, of its plans for the establishment of a big plant at Grahn, Carter county, Ky., which will be operated in connection with the company's present properties in Highland Park, a suburb of Louisville. The company possesses valuable clay lands at Grahn, a station named in honor of K. B. Grahn, president of the Louisville Fire Brick Works, and it is proposed to develop these with a plant capable of producing 30,000 fire brick per day. The machinery necessary for the enterprise has been purchased and is now being installed. It is expected that operations at the branch will be commenced on an extended scale early in spring.

The Louisville Fire Brick Works has reported exceptionally good business during the month. A number of blast furnaces in Southern iron and metal-working territory are supplied with furnace linings by the local brick plant and since business with these concerns has boomed, orders for linings have become plentiful.

QUESTIONS AND ANSWERS

Here, Knotty Problems That Confront Puzzled Readers of Brick and Clay Record, Are Unraveled by Experts

Readers of this journal who have problems in manufacture and salesmanship, or any other subject pertaining to their business, are invited to take advantage of this department. The services of the best experts of the world are at your command. Address Question and Answer Department.

The Best Dryer for Brick Plant.

32. *Ohio writes: "I would be pleased to receive any information you can give in regard to which is the best dryer for a brick plant with a capacity of 25,000 building brick per day. What are the advantages and disadvantages of a steam dryer also the radiated heat dryer? Would also like information as to the best and cheapest way of hauling clay to the plant. I have about ¼ mile to haul the clay and it is down hill all the way and too steep to brake a car to come straight down hill.*

The choice of dryer,—steam or radiated heat,—must be decided by circumstances.

If properly built the cost is practically the same, but a steam dryer can be cheaply built, if desired. If live steam is used entirely, it would seem that because of boiler losses, the most economical application of fuel would be to use it direct, which would give the preference to the radiated heat dryer, but in practice we find very little difference in fuel consumption. Where exhaust steam is used during the day the steam fuel consumption will be less than the radiated fuel consumption. There are many plants where the engine is overloaded and the boiler capacity is driven to the limit. We cannot put back pressure on the one nor take any steam from the other.

$5.00 PRIZE OFFERED.

To stimulate interest and discussion, we will pay $5.00 for the best practical and helpful suggestion for overcoming everyday troubles in clay manufacture. $1.00 will be paid for all other suggestions used. Contest closes January 5, 1913. Remember—Brevity and clearness of expression are desired. Write with ink. Use one side of the paper only. Address Superintendent's Dept., "Brick and Clay Record," 445 Plymouth Court, Chicago, Ill.

There are other situations where the distance from the engine and boiler to the dryer is too great for economical operation. In some places a licensed fireman is required for a steam plant, whereas a radiated heat dryer can be fired at night by the kiln fireman. Questions of this kind must be taken into consideration. We may often recommend a radiated heat dryer in an old plant where we would use a steam dryer if a new plant similarly situated were being built. The steam dryer has some advantages over a radiated heat dryer in drying tender clays. The pipes may all be put in one end or in a series of coils graduated from end to end, or for very fast drying, full size throughout. The graduated coils with the possibility of reducing the steam supply in each lend themselves more readily to drying tender clay.

The heat duct of a radiated dryer, usually (though not necessarily) extends through the dryer and the heat from it is trying on a tender clay.

The cheapest way of hauling clay would be in a tram car. We assume from the data that the method used is to follow around the hill in order to avoid a steep grade coming straight down hill. If this is correct, why not come straight down hill with a car using a three rail track and let the load coming down pull up the empty? We would use a friction drum at the top, which will hold the load on any grade. Even though the straight away distance should be one-quarter mile, we would use the gravity method, provided the grade is sufficient,—at least 12 per cent. We can hardly conceive a situation where the grade is too slight for the above gravity method and too steep to brake the cars down, and cannot be modified to suit one or the other. In one case, we can bring the cars around the brow of the hill to a point opposite the clay shed, and thus get all the fall necessary in a short straight drop. In the other case, we can wind the track around the hill,—put in a loop perhaps,—to get the desired grade to brake the cars down.

Use of Producer Gas in Scove Kiln.

33. *Mich.—As a result of the recent increase in the price of fuel oil, we are obliged to find other fuel for burning our brick. We would like to know if it would be practical to use producer gas. Our scove kilns are constructed in the usual manner, 25,000 brick per arch, the kiln having about 25 arches. Would it be possible to substitute producer gas for the oil?*

We do not think it practical to use producer gas in scove kilns and it certainly would not be an economical method of burning common brick. The gas is generated by heat from the fuel and in taking the gas from the producer to the kilns its initial heat is lost. Therefore, by the time the gas has reached the kiln a large percentage of the value of the fuel has been consumed and is lost. It is a question whether it is possible to get a sufficiently high temperature to burn brick with coal producer gas. This question was thoroughly discussed in Vol. 12, Transactions of the American Ceramic Society.

A practical demonstration was made a number of years ago in Illinois, but the kilns were down draft and not scove kilns. The test was a failure and while we have no particulars in regard to it we think the cause of the failure was, first, excessive fuel consumption and, second, inability to get sufficient kiln temperature from the coal gas. In continuous kilns we save some of the initial heat from the producer but in addition to that we have the air for combustion heated to a temperature nearly sufficient to burn the brick, and because of these two factors are able to get any desired temperatures. When, however, the gas is robbed of its initial heat and is called upon to heat the air required for combustion up to the kiln temperature, there are not sufficient calories in the gas to maintain the kiln temperature and unavoidable kiln loss.

Producer Gas in Up And-down-draft Kilns.

In this connection the following letter will be of interest:

Peru, Kansas, Dec. 4, 1912.

Editor "Brick & Clay Record": The question of using producer gas in down draft kilns has come up recently. Natural gas is getting scarce and even if plenty apparently, it is not reliable, it may give out any time, when most needed. It's like fortune that comes and goes. Oil is also getting higher and scarcer as time rolls by.

The down draft kilns in question are of the solid bottom type and not suitable for using coal. The flue and stack capacity is such that the kilns would surely "soot up," in watersmoking and I believe that with coal costing about $2.00 per ton delivered, producer gas could be made to solve the perplexed fuel question in the gas belt.

The following extract from the C. W. Raymond catalogue shows the advantages of using producer gas:

> The need of more perfect combusition and higher temperature in furnaces, greater economy, uniformity of process and more continuous operation than obtained in direct firing of coal, led to the development and use of producers and producer gas fired furnaces. In these furnaces the solid coal is converted into a combustible gas, containing practically all of the heat energy of the original coal. This gas can be conducted to **any desired place** for its **final** combustion.
>
> The chief advantages of this proceeding are:
>
> 1. **Perfect control of the combustion temperature.** Both the gas and air are susceptible of accurate adjustment, allowing their use in the most advantageous proportion.
> 2. **Uniformity of temperature.** As the flow of the gas from the producer is practically uniform at all times, a steady heat will result. On the other hand, as both air and gas are under perfect control, increase or decrease of temperature is in the hands of the operator without changing the nature of the kiln atmosphere. Also, the temperature throughout the kiln is very uniform and the difference stays within one or two cones (20 to 40 degrees Fahrenheit).
> 3. **Fuel Economy.** The fuel economy results from the fact that the combustion takes place under very nearly theoretical conditions.
> 4. **Concentration of the Fuel Plant.** The coal is all delivered and used at one place and does not require to be carted around to different furnaces or kilns. The result is saving in labor and greater cleanliness about the factory.
> 5. **Simplicity and Convenience in Operation.** This results in independence from the judgment and experience of the burner to a greater extent than with any other type of kiln.

Undoubtedly the C. W. Raymond Co. investigated the matter thoroughly before printing the above statements. Their claims are based on the use of the continuous kilns, but I would like to hear discussion on this very important subject, from gas experts or from others who know, why it is not practicable to convert coal into producer gas for firing down draft or up draft kilns? I believe that this could be done and the fuel question in the gas belt could thus be settled in a measure and no brick manufacturer would find cause for losing heart, because gas (the natural kind) has given out, and taking his life, as happened recently in Kansas.

Whether this can be done or not, namely converting coal into gas for other than continuous kilns is a problem worthy to be solved, especially in localities where the kiln builders have been too near-sighted to provide for the future and thereby failed to construct kilns suitable for burning any kind of fuel, without incurring heavy expenses in altering the same for coal firing.

If I am wrong I am ready to be corrected, but I want proof, based on practical experience, not only with figures on paper. Show me.

Respectfully, ANTON VOGT.

33. *Washington.—I have some chocolate colored refractory clay which I desire to use for making floor tiles or brick by the stiff-plastic process. Can you tell me where to send the clay to be tested and what the cost of same will be?*

A number of State universities maintain laboratories for the testing of clays, the charges ranging from $10 to $80.00, depending upon the thoroughness of the test. A complete test includes a chemical analysis of the clay, information as to the products the clay is best suited to make and samples of the different products after burning. Among the universities which maintain laboratories for testing clays are: The University of Illinois, Urbana, Ill., Ceramic Dept., in charge of R. T. Stull; Ohio University, Columbus, O., Prof. Edw. Orton, Jr., in charge; Alfred University, Alfred, N. Y., Prof. Chas. S. Binns, in charge and Rutgers College, New Brunswick, N. J.

Testing laboratories are also maintained by a number of clay machinery manufacturers, where clays are tested, free of charge.

The Sintering Point of Clays.

44. *Ohio.—What is temperature at which vitrification of clay takes place?*

Dr. Rohland has recently pointed out the great importance of the temperature at which vitrification becomes noticeable in a clay as an indication of the completion of a definite stage in the burning. Sintering, or vitrification, is not merely a superficial melting, as is often supposed, but is due to some of the constituents of the clay becoming completely molten whilst others are unaffected except in so far as they absorb the molten material and are corroded by it. If, after the sintering point has been reached, the temperature continues to rise or the heat is sufficiently prolonged, the molten portion will corrode and dissolve the more refractory portion as to reduce the whole material to a semi-molten mass.

The difference between the temperature at which sintering or vitrification occurs and that at which the clay melts completely—usually termed the "vitrification range" —varies with the nature of the clay. In some cases the clay melts as soon as vitrification becomes noticeable, in others the vitrification occurs at a dull red heat, but the material does not lose its shape until after a prolonged heating at the highest temperature of a fire-brick kiln.

Calcareous clays have the melting and sintering points close together, so that it is almost impossible to produce vitrified and impervious ware from them, as they lose their shape too readily. If, however, the difference between the sintering and fusing temperatures can be enlarged—that is, if the vitrification range can be extended —more impervious ware can be made.

Information Wanted.

38. *Kentucky.—We are using shale and loam in manufacturing flower pots and are experiencing considerable trouble on account of the white scum which appears on the outside of the pots. What is the cause and what is the preventive?*

39. *British Columbia.—Our clay which is 40 ft. deep is plastic and of excellent quality but at a depth of 18 ft. there is a 3-ft. stratum, containing a considerable quantity of granite pebbles, ranging in size from a "marble" to 2 inches in diameter. If we run the rolls in our disintegrator close enough to crush the clay sufficiently fine, the progress of the gravel is stopped and finally stops the flow of clay. If the rolls are spaced sufficiently to permit the passage of the gravel, lump clay in the finished brick only adds to the difficulty, resulting in a great deal of cracking and breaking of the brick, both in the drying and burning process, making the percentage of waste very large.*

Can any of our readers solve the above problems?

The National "09" Heater, manufactured by the National Blower Works, Milwaukee, Wis., is fully illustrated and described in folder No. 56, recently issued by the National Blower Co.

The R. D. Nuttall Co., Pittsburgh, Pa., has just published its latest revised price list on forged steel motor gears and pinions in the form of a forty-page booklet.

THE PAVING BRICK INDUSTRY

BETTER ROADS CONVENTION.

Ocean to Ocean Highway Plan Discussed—Road Laws to Be Re-Framed.

Two motives prompted the holding of the Indiana Better Roads Convention in Indianapolis, December eleventh, twelfth and thirteenth. One was the promotion of the proposed National Coast-to-Coast Highway and the other to influence the state legislature now in session in reframing the antiquated road law which excludes brick and all other forms of paving for country highways with the single exception of macadam.

Speakers not only from all over Indiana were present at the convention but also from many other states, and the cost-to-coast plan, launched several months ago in the Hoosier capital, received a fresh impetus.

The effort to interest the legislature in changing the road law so that brick can be used when the people ask for it, likely will meet with success. The present statute was enacted years ago when the cost of brick was prohibitive and macadam was considered the only practical form of paving. Modern methods in brick manufacture, however, have wrought changes in conditions and Indiana is just awakening to the fact that it is very much behind in highway improvement. Macadam, too, has disappointed its former advocates and the people are demanding a more durable pavement, such as brick.

The paving brick interests of the country were in attendance in considerable numbers and their exhibits of good roads, shown at the German House, attracted more favorable attention than those made by the various other paving interests.

FLORIDA LEADS IN BRICK ROADS.

State Plans Issuance of $50,000,000 bonds to build Extensive Brick Road.

(By Special Correspondence.)

Birmingham, Ala., Dec. 9.—"The state of Florida is leading the entire South in the construction of brick roads in the country," said B. A. Inglis, vice-president and general manager of the Copeland-Inglis Shale Brick Co., and president of the Alabama Paving Co.

"Florida has made a substantial beginning in the way of constructing public highways of the most lasting of all paving material—brick," continued Mr. Inglis. "As a matter of fact, however, the state did not adopt brick to start with. All sorts and kinds of paving material were tried, and after the tests were made and the final word was said, they are turning to brick as the most satisfactory of all materials. Duval county, of which Jacksonville is the county seat, has, as you know, been particularly progressive in this respect, having paved many miles of its roads with brick, and is still going right ahead with the good work.

"It is not necessary to have a concrete foundation for these brick roadways, either," he continued, "for Florida sand, of the fine kind they have there, packed hard, serves admirably as a foundation for the pavement. I noticed recently some brick pavement laid two years ago on a Florida country road over sand, packed hard, and it seemed to be as good as it was the day it was laid. A brick pavement, in my opinion, is the only one that will stand up under automobile traffic."

Mr. Inglis was much interested in the report that Florida was considering the issuance of fifty million dollars of bonds for the purpose of building brick highways.

"I have seen only a general statement of the plan," he said, "but it is one that is both ambitious and creditable. The plan contemplates the building of a brick highway from Jacksonville to Pensacola, in the extreme western section of the state, then a highway down the east coast to Miami, with another branch across from Jacksonville to Tampa, with laterals to important county seats.

Team Hauls Three Wagon Loads.

"A little incident will illustrate the value of these brick roads in Florida. Recently a man hauled a load—such as it was—from his farm to the brick road, three or four miles away, dumped it by the side of the road, went back and got another 'load' and hauled it through the sand to the side of the sure-enough road, and then went back and got another. And then he put all three of the loads on his wagon and drove briskly to town over the brick highway.

"While Florida is particularly enterprising in building roads of this character, yet the idea is by no means a new one," concluded Mr. Inglis. "In certain of the Northern states brick are used extensively in building county roads. And the idea is bound to become more and more popular in our section of the country."

BRICK GAINING IN SOUTHWEST.

Force of Publicity Campaign Beginning to Bring Results —Wood Block Losing Ground.

(By a Staff Correspondent)

At a recent election of tax-payers of Corsicana, Texas, the proposition of issuing $20,000 worth of bonds for street paving was carried. It is proposed to pave the business section of that city with vitrified brick and the residence streets with asphalt.

The campaign which "Brick and Clay Record" is waging for the more general use of brick in construction work throughout the country meets with the hearty endorsement and commendation of not only brick manufacturers of Texas and the Southwest but of many conscientious contractors as well. No one realizes more fully the real worth of brick, as a construction material, than contractors who are familiar with its lasting and attractive qualities.

The general interest that is being aroused in giving proper recognition to brick as a material for all lines of construction, promises, it is said, to bring early and good results not only in Texas but throughout the country. It is the opinion of manufacturers of pavers that the increase in the demand for wood paving block is an artificial flurry that will soon pass away, no matter how strong the efforts on the part of promoters of that material may be to keep up the market for same. It is said that the failures and defects of wood block paving so clearly manifest themthemselves that the demand for the material will in a short time pass away on account of its own shortcomings.

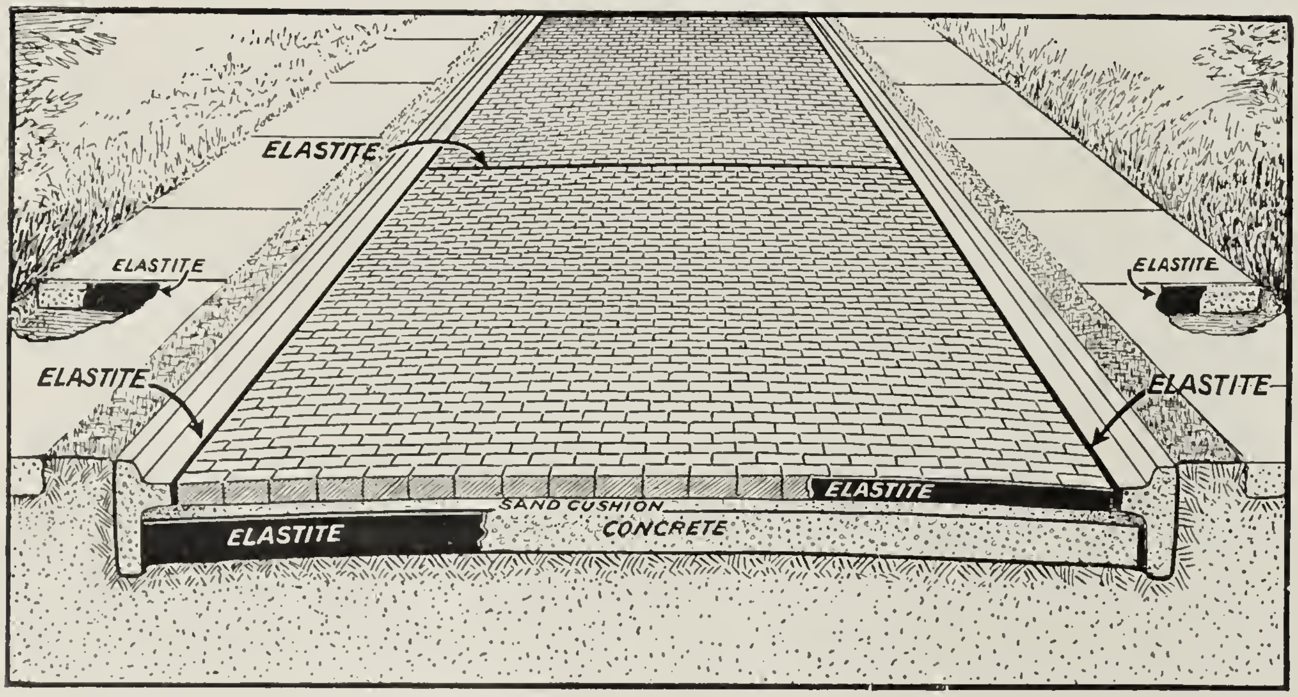
CITY PURCHASES PAVING BRICK.

Louisville, Ky., Proposes to Bring Contractors to Time By Doing Its Own Paving.

The Board of Public Works of the city of Louisville, Ky., incensed over what are alleged to be extravagant bids by paving contractors for municipal work in the Bluegrass metropolis, has commenced its campaign to bring the contractors to time. Our correspondent tells us that the Board has purchased the materials, employed the necessary labor and handled all other incidentals of contracting, in paving Garden street from Chestnut to Baxter avenue with vitrified brick. The city proposes to handle its own paving on a restricted scale until bids solicited by it come down to what it regards as a reasonable figure or until a sufficient amount of paving accumulates to make it worth while for a big letting of $100,000 or so to be submitted, which would attract bids from contractors in neighboring cities, such as Cincinnati, St. Louis, Indianapolis, Chicago. The Gateway City has also purchased a new paving brick "tester," to be used in determining the quality of materials used in paving its thoroughfares. The tester, which may be operated by electric power at a speed of 30 revolutions per minute, is in charge of E. B. Schmidt, a paving expert regularly employed by the Ctiy Engineering Department to supervise the street-work. It is expected that the use of the tester will guarantee a high-grade product for usage in the city work.

NEWS IN PAVING CIRCLES.

The Board of Public Improvements of St. Louis, Mo., has recommended drafts of ordinances for the improvement and re-construction of streets at a total cost of $318,763, apportioned as follows: brick, $111,506; asphalt, $151,619; bitulithic, $31,533 and Telford, $24,105.



Brick Pavement, Showing Use of Elastite Paving Joint.

A New Paving Joint.

The accompanying illustration shows the use of the new Carey Elastite paving joint in the construction of a brick street. The manufacturers claim that this joint will withstand the strain of heavy traffic and when exposed to rain and sun, will not bulge or buckle, and no wood strips are needed.

The Capital City Vitrified Brick & Paving Co. has secured the contract for paving Highland Ave., Topeka, Kan. The bid was at $1.20 per sq. yd. The paving will be sixteen feet wide and 2,500 feet long, making the total cost $5,332.

The specifications call for a brick or block pavement, with concrete headers. A one-inch cushion of sand is then to be spread over the brick and on top of that the vitrified block are to be laid at right angles to the first course.

NO ONE BOOSTING BRICK.

Excellent Opportunity Being Neglected—Other Interests Pushing Their Materials to Front.

Minnesota offers an excellent field for the exploitation of the worth and value of brick for country road paving. The state passed a constitutional amendment at the late election, permitting good road construction by counties and towns. When a town votes for good road construction, the county must pay a certain amount and the state also. Under this law, the county in which Minneapolis is located, will construct six miles of concrete roadway, at a cost of $10,000 a mile, which will be the beginning of an extended system of roads. If brick were used instead, the satisfaction to all concerned,—except the concrete men,—would be greater, the service better and the cost of maintenance less. But, we are told, no one is boosting the brick proposition, while the others are active all the time, and losing no opportunty to advance their interests.

BRICK PAVEMENTS CUT LIVING COSTS.

Network of Paved Roads in Cuyahoga County, Ohio, to be Extended Materially.

Cuyahoga county, Ohio, commissioners are doing all in their power to reduce the cost of living to Clevelanders by adding to the network of paved country roads and by opening up other roads so that produce may be delivered to the markets at a minimum cost. Incidentally they are providing some of the prettiest auto drives in the country.

One can ride 300 miles over paved shady country roads without going outside the county. All these roads are connected by branches in every direction.

Green road, in the eastern part of the county, has been ordered paved. The Center Ridge road will be paved to the county line and improvements in Lorain county will connect Elyria and Cleveland by an improved thoroughfare.

The State road is being repaved under the auspices of the State Highway Commission. Brook Park road has been opened to connect Berea with Euclid, Ill.

POTTERY NEWS

MORE SANITARY POTTERIES IN VIEW.

Increasing Demand for Sanitary Ware Results in Many Promising Plant Projects.

George Bryan, for many years connected with the Elite Sanitary Pottery Co., of Trenton, N. J., has been named as manager for the first sanitary pottery which is to be operated in East Liverpool, O. He will be connected with the Colonial Pottery Co., which has begun preliminary work toward the manufacturing of sanitary pottery. Two kilns will be used in this general ware plant for sanitary pottery, and the first kiln will be fired during the first week in January, next.

The idle plant of the Ohio factory of the General Electric Porcelain Co., will be put on sanitary ware work, early in the new year by J. F. Mays, who was formerly connected with the Wheeling Potteries Co., of Wheeling, W. Va. In this connection, it is said that it is the intent of Mr. Mays to start two sanitary shops in East Liverpool, and that one of the three idle potteries there now will be bought and converted from general to sanitary ware. The bulk of the stock that will be used in the new May's company has been subscribed, and the incorporation papers will be filed at an early date.

Plans Union of Electric Porcelain Workers.

Former President Thomas J. D. Duffy, of the National Brotherhood of Operative Potters has started a movement which has for its object the unionizing of all electric porcelain workers in the United States. This is the first time that this effort has been started upon such an elaborate scale. The new union will include all of the electric porcelain workers in the Trenton, N. J., district as well as those in the East Liverpool district. The new organization is to be known as the Federated Labor Union, and the work of organization is progressing under the rules of the American Federation of Labor.

The Thompson Pottery Co. has announced a $10,000 improvement program at East Liverpool. The company will increase its battery of kilns to eighteen, and will build a large decorating shop of two stories, opposite the Pennsylvania railroad at its plant, the main buildings and the new shop to be joined by an overhead bridge.

At Sebring, O., on the Ft. Wayne railroad, the first experimental pieces of sanitary ware have been made at the E. H. Sebring Pottery Co.'s "Oliver" plant.

It is planned to convert the "Oliver" plant into sanitary, and the general ware operatives employed there will be transferred to the Saxon China Co.'s pottery, which is of nine kiln capacity, but only working six kilns at present.

Will Increase Kiln Capacity.

Secretary-Treasurer Guy Crooks, of the Crooksville China Co., of Crooksville, O., has just announced that his firm is compelled to increase the kiln capacity of its plant, and that two new kilns will be started soon after the first of the year. These are the only new kilns announced for Ohio.

The making of sanitary pottery by the Colonial Pottery Co., of East Liverpool, will soon be a part of its industry. Two kilns will be devoted to that branch of the business. This will be the first sanitary ware manufactured in the eastern Ohio district. General Manager Chris Horton, of the Colonial Co., has recently returned from Trenton, N. J., where he secured a manager for the sanitary branch. He will also procure other workers from the Wheeling district—some of the East Liverpool potters who left the general ware benches to take sanitary benches in Wheeling.

It now appears that the construction of general ware plants at Scio and Washingtonville, O., as previously contemplated, has been given up for an indefinite period. Several East Liverpool parties were back of this movement, but the additional kiln construction now going on in the East Liverpool territory has acted as a stay upon the plans of the other promoters.

CANADIAN CONVENTION FOR 1913.

To Be Held at Prince George Hotel, Toronto, Jan. 14-17—Interesting Program Planned.

Toronto clay manufacturers are making many plans for the entertainment of visiting delegates who attend the annual convention of the Canadian Clay Products Association, which will be held at the Prince George Hotel, Toronto, Can., Jan. 14-17, inclusive.

A tentative program has been arranged, which will be subject to alterations when the entertainment committee starts to arrange for speakers, etc.

The convention will open on Tuesday, Jan. 14, at 2:30 p. m., Mayor Hocken, of Toronto, giving the welcoming address. Among the many interesting subjects to be discussed are "Mining the Clay," "Care of Machinery and Power Plant," "Drier Problems," "Salting Brick," "Tile Publicity," and "Credits and Booking."

Practical clay men will be secured to lead these discussions and to answer any questions that may be asked.

Among the entertainments planned for the visitors are a theatre party, an automobile trip, a banquet, and a smoker.

WESTERN TILE DRAINAGE BUREAU.

Meeting at Des Moines to be Devoted Largely to Organization Question.

C. B. Platt, secretary of the Western Tile Drainage Bureau announces that the convention will be held at Des Moines, Ia., either the 8th and 9th, or the 20th and 21st of January, 1913. While the program has not as yet been fully completed it is understood that subjects of unusual interest and importance will be discussed, particular stress being laid on the question of organization, with a view to bettering present conditions in the industry.

A number of prominent speakers are to speak on the all-important subjects of Organization, Publicity and Cost of Manufacture.

Preparations are being made to entertain a large crowd and from all reports, a rousing meeting will be held. It is the duty of every Iowa tile manufacturer, interested in promoting and furthering the cause of clay products to attend this meeting and do his part in the great work which the Bureau is endeavoring to carry on. The state associations are taking up publicity in a business-like way. They need

SAND LIME DEPARTMENT

INTERNATIONAL SAND-LIME CONVENTION.

Unusual Interest and Enthusiasm Marked the Recent Meeting at Toronto.

At 10:00 A. M., Dec. 3rd, at King Edward Hotel, Toronto, Ont., President Goho opened the Ninth Convention of the American Association of Manufacturers of Sand-lime Products. The meeting was opened without a formal address, the president simply calling the meeting to order, stating that as there was much to do, he wished to occupy as little time as possible and would give vent to his thoughts from time to time throughout the meeting, as occasion might arise.

The reports of Secretary Plummer and Treasurer Jackson were received, Secretary Plummer calling attention to the excellent financial condition, which would enable the Association to reach out farther in its "Publicity" work.

The executive committee reported the resolution of 1911 to change and shorten the name of the association, and the resolution was unanimously adopted, changing the name to The Sand-Lime Brick Association, under which name the organization will sail hereafter.

After noon adjournment the session was resumed, the first paper being by W. H. Crume on "The Present Condition of the Sand-lime Brick Industry."

Mr. Crume spoke in his usual bright and effective manner, and as a practical and successful manufacturer of several years' experience, his words carried great weight, facts and figures with every-day intimacy with the subject making statements well worth listening to, and also worthy of preserving for future reference. We hope to be able to publish the paper in full in a future issue of this journal.

Emley on Testing of Sand-lime Brick.

Warren E. Emley of the U. S. Bureau of Standards, followed with a paper on "Results of Testing Sand-lime Brick," which proved to be of exceptional interest and value. Mr. Emley, as the representative of U. S. Bureau of Standards, is sent to the meetings of the Sand-lime Association for the purpose of keeping in touch with the industry, in which the Bureau is deeply interested. This interest is of great value to the Association and its able representative is always very gladly and warmly received, not only on account of his delightful personality, but for the valuable knowledge and suggestions he is able to give from his well-stored and practical mind. His interest and research have been of great value to the members of the association, whose aim is to improve the standard of the industry and a continuance of his intelligent work is sure to bear still greater fruits. The address from Mr. Emley and discussions brought out by same being of a technical nature are only of interest to the manufacturers in this industry, and are therefore retained in the records of the Association and not published for the public. It may be said that each succeeding year Mr. Emley's work has aroused increased interest and this year's paper "capped them all."

The members of the Association, as guests of the Toronto and Harbor brick companies, assembled in the Banquet Hall of King Edward Hotel at 6:30 P. M., Tuesday night, Dec. 3rd, and were given a royal banquet. The hosts having spared no efforts to give the best the city afforded. Owing to unexpected circumstances, the Mayor was unable to be present and give the address of welcome, as expected, which was a disappointment to those present, but the hosts rose to the occasion and what, with the "glad hand" and happy remarks of Mr. F. B. Allen of the Toronto Brick Co. and Mr. H. W. Terry of the Harbor Brick Co., and the responses by President Goho and Mr. L. W. Penfield, everybody was both physically and mentally refreshed and delighted. At the close of the banquet Messrs. Allen and Bennet of Toronto gave some very fine music and song impersonations, which made a delightful finishing touch to a most enjoyable evening spent with our good Canadian friends.

After the banquet, at a business session and smoker, P. L. Simpson gave a paper, "Some Thoughts on the Development of the Sand-lime Industry." This paper was of great interest to the delegates, as might have been expected, knowing as they did the wide experience of the speaker and his ability to give out his knowledge. The paper will appear in a future issue of this journal.

Visit Toronto Plants.

On Wednesday, at 8:30 A. M., visiting delegates, as guests of the Toronto and Harbor brick companies and the Berg Machinery Mfg. Co., entered motor cars and were driven to the Harbor Brick Company's factory. Here they found a very interesting exhibit of one of the several methods used in the manufacture of sand-lime brick, and found excellent results in output, the product being marketed as fast as produced.

From there a short ride was taken to the Berg Machinerg Mfg. Co. shops, where, after a warm welcome, the party inspected the plant and were loud in their praise of the up-to-date methods and machinery and the fine goods turned out. The general expression of feeling was best expressed by the words of a machinery manufacturer, who is a strong competitor. He said: "Gentlemen, I want to tell you, from one who thinks he ought to know, that Mr. Berg has a fine up-to-date plant and I am pleased to have been allowed to visit it."

Evidences of Ready Sales.

The party then proceeded to the Toronto Brick Co.'s Swansea factory, where were found good brick and evidence of ready sales, the brick being shipped as soon as made, the supply being unequal to the demand. The next point visited was the Toronto Brick Co.'s east-side factory, at Scarboro. This factory being of the newest design in sand-lime brick manufacture and only recently installed, was of great interest to the delegates, few of whom had seen a plant similarly designed, the plan being the American Clay Machinery Co.'s conception as to the practical application of the latest methods in the manufacture of sand-lime brick. Nearly an hour was spent in careful examination of machinery and products and all felt well repaid for their journey. It was difficult to induce the party to leave and return to business, and arguments, pro and con, may still be heard among those who visited the plant. At this plant were also found excellent brick and the same condition—not enough stock to supply the demand.

The Nominating Committee reported at the afternoon meeting and the following officers were unanimously elected for the ensuing year:

President, S. O. Goho, Harrisburg, Pa.
Vice-president, F. B. Allen, Toronto, Ont.
Secretary, W. E. Plummer, Jr., Buffalo, N. Y.
Treasurer, John L. Jackson, Saginaw, Mich.
Executive Committee:
Canadian Div., G. Silvester, Calgary, Alta.
Western Div., E. G. Chapman, Minneapolis, Minn.
Eastern Div., W. M. Burchfield, Rochester, N. Y.
Southern Div., H. H. Tift, Tifton, Ga.
Central Div., L. W. Penfield, Willoughby, Ohio.

Reports of committees were heartily approved, showing the most harmonious feeling on the part of the members. Among these reports were recommendations to hold the 1913 meeting on Tuesday and Wednesday, December 9th and 10th, at Harrisburg, Pa., and this will be the next

The representation of members at the convention was as follows:

Paragon Plaster Co., W. K. Squire and W. H. Boggs. Crume Brick Co., W. H. Crume. Rochester Composite Brick Co., W. M. Burchfield and Homer Knapp. Mfgs. Equipment Co., Chas. Stevenson. Harbor Brick Co., H. W. Terry and Harry Burnsides. Bird's Hill Sand-L. B. Co., D. D. Wood and F. A. Clary. Winnipeg Sandlime B. Co., W. D. McFarlane. F. Kormick, Elbing, Germany, Paul Jaxt. Acme Brick Co., Irwin Toepper and Wm. Moder. Lehigh Car Wheel & Axle Co., H. C. Shields. Hummelston Brownstone Co., S. O. Goho and A. K. Walton. Buffalo Sandstone Brick Co., W. E. Plummer, Jr., A. Kempf. Berg Machinery Co., A. Berg, John Berg, Chas. Berg and Robert Bertram. Calgary Silicate Pressed Brick Co., G. Silvester. John Mann Brick Co., Fred Mann and Edmund Horley. Rock Products, F. K. Irvine. American Clay Machinery Co., L. W. Penfield, P. L. Simpson, C. J. Carmichael and W. H. Merkel. Saginaw Brick Co., John L. Jackson. Jackson & Church Brick Co., E. D. Church. Belt Line Brick Co., J. Jellie. Grande Brick Co., H. O. Joseph. Toronto Brick Co., F. B. Allen, L. E. Prosser, H. Race and R. A. Callan.

BRICK USED IN BAKERY OVEN CONSTRUCTION

(Continued from page 476.)

tile, but the terrific heat to which the interior is constantly subjected has weakened such contrivances and rendered them useless after a couple of years of service, proving that flat foundation surfaces of fire brick are the only practicable means of handling the bake after it has gone to the fire. More than one baker is wiser by the costly experience of weakened T-rails which were installed at considerable original expense, but which could not stand the strain.

It must be remembered that a baker's oven, when once fired, is never allowed to cool, until the shop goes out of business or until the structure is demolished to make room for a new and larger one. Not only that, but the heat to which the lining and walls are subjected is by no means ordinary, averaging at least 510 degrees Fahrenheit and often above that point.

One Trial of Concrete Sufficient.

Here it is that brick demonstrates its superiority in a number of ways. It is the only material which will resist the inroads of week after week and month after month of extreme heat. Not very many years ago some genius in concrete construction proclaimed that he had invented an oven which was to revolutionize the bakery trade because of its cheapness and durability. One made of concrete lined with fire clay was widely exploited. The unexpected and the expected happened at one and the same time when the innovation was tried out. Men who had experience in the line predicted that concrete would crumble before baking heat, but it did not do this. It simply expanded and contracted with such perplexing regularity as the heat waves vibrated in its interior that within a few weeks after the oven walls had been set and put in commission they were condemned as unfit for further use. Such was the experience of American bakers during the short time when concrete, a thoroughly reliable material for some purposes, was acclaimed as the panacea of the builder's ills.

Brick Resists Heat, Also Retains It.

Brick not only resists fire but also retains it. This is the attribute which has anchored the clay product more firmly than any other as a material in oven construction. The baker is proverbially an economical soul. Frequently he is a native-born German, endowed with all the characteristic thrift of his race. Nothing delights him more than the minimized fuel bills which result from his employment of brick ovens to retain as well as to withstand the greatest heat. A brick oven, after it has once been thoroughly fired, requires but little fuel, comparatively speaking, to keep it at the desired temperature. It is this momentum which has swung the product of the kiln to widespread popularity in one of the biggest industries in the country, and it is the inherent quality of the brick which will enable it "to deliver the goods" in the bakeshop for as long as oven fires burn in every city in the land.

MARION'S LARGEST INDUSTRY

Pioneer Steam Shovel Company Holds Remarkable Record—Runs Plant Continuously Day and Night for Past Three Years

The plant of Marion Steam Shovel Co., which occupies 75 acres, is much the largest industry of the thriving town of Marion, O. The plant has the remarkable record of having worked continuously day and night for the past six years. Notwithstanding the fact that it already employs some 3,500 men, six men are on the road, on the lookout for additional men to the extent of 1,000.

The Marion Company, which is the pioneer in the steam shovel line, makes excavating and dredging machinery of all kinds. It recently shipped to the Alaska gold fields two immense hydraulic dredges, which required 140 freight cars for shipping, and sold for the total sum of $1,700,000.

The Marion shovels are especially remarkable for their flexibility and the ease with which they may be adapted to various uses. In their ad., appearing elsewhere in this issue, a group of pictures shows the many varied ways in which Model No. 20 may be advantageously used. This model is of medium size, constructed with especial regard to the needs of contractors and clay manufacturers. A decided advantage to the clay manufacturer who purchases this model, is the fact that when his plant grows and a larger shovel is needed, he can easily dispose of it to contractors.

TRADE REVIEW

Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers—Market Fluctuations and Industrial Prospects

NEWS OF THE CLAY WORLD.

The Pennsylvania Fire Proofing Co., of St. Marys, Pa., is installing 20 new kilns, which will double its capacity. The company is also planning to install a new engine and generator. Oscar Boyd is the local manager, J. A. Maahs, Masonic building, Erie, Pa., is general manager.

The records of the Work Department of Toronto, Can., are particularly suggestive as to the relative use of various materials in that city. Up to the week ending Saturday, November 23, the quantities for the year 1912 were as follows: Sand, 24,660 yds.; cement, 65,167 bbls.; stone, 53,422 tons; coal oil, 17,252 gals.; sewer brick, 676,473 bricks; paving block No. 2, 117,027 blocks; paving block No. 1, 1,245,140 blocks; paving bricks, 80,630 bricks; asphalt, 1,000 tons; vitrified sewer pipe, 158,000 ft.—roughly 29 miles of pipe, varying from 6 in. to 24 in.

Contracts have been awarded to Engineer Samuel Harper for rebuilding the brick plant of the Portsmouth (O.) Paving Brick Co.

Tests are being made of a promising quality of clay, found at Hay Creek, near Red Wing, Minn.

The Red Wing (Minn.) Sewer Pipe Co. is looking forward to a promising season next year. It has many good contracts already in sight.

Construction work is under way for the new plant of the Valley City Brick & Tile Co., Valley City, N. Dak.

The plant of the Kaul Clay Mfg. Co., at Toronto, O., which was recently placed in operation, is running full time, and with 500 h. p., 30 circular kilns and 300 employes, the company will be enabled to turn out large quantities of sewer pipe and flue lining. The officers of the company are: Jno. Kaul, president; Louis A. Kaul, treasurer, and Jas. Mannion, manager.

The New Lexington high voltage porcelain plant, of New Lexington, O., has been ordered sold by court, in order to pay the judgments rendered against the company by its creditors.

The Ft. Recovery Tile Co., of Ft. Recovery, O., has increased its capital stock from $10,000 to $30,000.

A reduction in the freight rate on brick from Sioux City, Ia., to Oakland, Neb., has been made by the Burlington railroad, at the request of the Sioux Brick & Tile Co. The old rate was six cents per hundred and the new rate is one cent cheaper.

The state of Kansas is maintaining laboratories for testing brick, concrete and cement.

The name "Richmond" will appear on all the products manufactured by the Western State Porcelain Works at Richmond, Cal. This idea will help the new company in advertising its products and also its home town.

The Hanreddy Brick Co., of Chicago, Ill., has leased a square block of land, bounded by Lawrence and Argyle avenues, and North Lincoln street, and the Chicago & Northwestern railroad tracks.

The Standard Brick Manufacturing Co., of Evansville, Ind., is installing a new No. 7 brick machine, a No. 5 rotary side cutter, and a 15-foot heavy duty pug mill, all of the Chambers Bros.' make.

The H. W. Johns-Manville Co. announces the appointment of C. S. Berry as manager of its Atlanta, Ga., office, located at 31½ So. Broad street. To facilitate delivery in the South a stock of roofings, packings, pipe coverings and other J-M asbestos, magnesia and electrical products is carried at the above address.

We chronicle the receipt of the first calendar of the season, that of the Brown Instrument Co., Philadelphia. It is in two shades of brown and is of a neat and attractive design. The company will be pleased to send calendars to any of "Brick and Clay Record's" readers, upon receipt of request.

Four hundred acres of koalin property at Horrell, S. C., will be developed by the Palmetto Koalin Co., New York City. The company anticipates a daily output of 100 to 150 tons.

The Edwin M. Knowles China Co., of Chester, W. Va., has increased its capital stock from $150,000 to $500,000.

Boston brick manufacturers say that the only difficulty they are troubled with is the supplying of bricks as fast as they are wanted.

The Southern Brick & Tile Co., of Louisville, Ky., was recently paid an unexpected visit by safecrackers.

A temporary injunction was rendered against Joseph Young, of Sunbury, Pa., because he refused to comply with the ordinance requiring fireproofing material to be used in the "fire-zone" of the borough.

The plant of the Altoona Vitrified Brick Co., at Altoona, Kan., declared bankrupt, was sold to D. C. Morrow, of Iola, for the remarkably low sum of $6,200.

The brick plant of the Consolidation Coal Co., at McRoberts, Ky., has increased its output to 50,000 brick per day.

The brick plant of R. W. Barstow, of Barnum, Minn., was sold to H. O. Wilson, of Forest Lake, Minn. In addition to common brick, the new company will manufacture hollow brick, tiling and flower pots, for which the machinery has already been purchased.

The new brick plant at Blackwell, Kan., has created quite a boom in building operations there.

The Minnesota Farmers' Brick & Tile Co., of Austin, Minn., will erect four additional kilns. The company is obliged to enlarge its facilities in order to cope with its rapidly increasing business. Ten dwelling houses for the accommodation of its employes will be erected by the concern. The industry employs a large force of men and paid $60,000 for labor during the past year.

The Federal Betterment Co., of Cherryvale, Kan., is installing a new water system at its brick plant and it is also stripping new shale ground and making extensive improvements throughout the plant. "We are going to run until the first of the year if the weather will permit," said Manager J. N. Strickler "We are running full force now and making our full output of brick, which we are selling in seven different states. The only trouble we are having is in getting enough cars to handle our shipments."

We are advised that the Standard Clay Products, Ltd., capitalized at $1,000,000 is planning to erect a 12-kiln plant in Nova Scotia for the manufacture of sewer pipe, building brick, etc. W. C. Trotter is the general manager of the concern and C. S. Trotter assistant manager.

We are sorry to learn that R. E. Sunderland, of Sunderland Bros. Co., Omaha, Neb., has been compelled to take up a temporary residence in San Francisco, Cal., on account of his wife's health. We trust Mr. Sunderland will not leave the clay industry permanently for we need him and his progressive ideas and we cannot afford to lose men of his type. His friends extend sympathy and wishes for Mrs. Sunderland's speedy recovery. E. M.

Sunderland has succeeded R. E. Sunderland as secretary of the company.

The Ohio Ceramic Engineering Co., of Columbus, O., recently sold 1,000 Lakewood cars on a single order to the Sayre & Fisher Co., which is the largest order for brick cars, the company has received in recent years.

The Elgin Standard Brick Co., of Elgin, Texas, has been incorporated with a capital stock of $30,000. The incorporators are: W. H. Rovers, Jr., M. J. Carlton and W. C. Rivers, all of Elgin.

The Reliance Brick & Tile Co., of Belle Plaine, Ia., is making preparations to install a crusher that will break up into proper sizes, any damaged brick or tile spoiled in the burning.

The Underhill tile factory of Grandveiw, Ind., did more business the first week in December than at any other similar period in the eleven years it has been established.

An exceptionally good quality of fire clay has been discovered one mile south of Moreland, Ky., and arrangements are being made to organize a company for its development.

The Salmen Brick & Lumber Co., Ltd., of New Orleans, La., is deeply interested in reclaiming the Mississippi Valley region that was practically devastated in the great flood of 1912. They are sending out letters to business men, asking assistance for the National Reclamation Association in its effort to secure the passage of the Newlands River Regulation Bill at the next session of Congress, which bill will provide for extensive constructive work to protect the great central valley of the United States from overflow and destructive floods. The entire appropriation for controlling the flow of waters in the Mississippi River Basin would be $300,000,000—less than the cost of the Panama Canal.

NEW PLANTS AND ADDITIONS.

The Tampa Tile Ornamental Co., of Tampa, Fla., has been incorporated with a capital stock of $25,000 to manufacture tiling.

The National Terra Cotta Co., of Kansas City, Mo., was incorporated with a capitalization of $100,000. The incorporators are A. F. Crocker, W. A. Green, R. Edwards.

The Thomas Connelly Co., of Chicago, Ill., has been incorporated with a capital stock of $20,000. It will deal in sewer pipe, cement, tile and other building materials.

It is reported that the Salina Vitrified Brick Co., of Salina, Kan., is making preparations to equip its plant with electric power.

The Perfection Brick Co., of Philadelphia, Pa., recently suffered a loss by fire of about $30,000.

C. A. Holl, Wichita representative of the Kansas Buff Brick Co., is said to be negotiating with the Wichita Business Association in regard to the erection of a large brick plant at Wichita, Kan.

If the Springfield Commercial Club agrees to pay a certain stipulated bonus, the Joplin Stocks & Bond Co., of Joplin, Mo., will erect a good sized brick manufacturing plant in Springfield, Mo.

The Chehalis Clay Co., of Chehalis, Wash., has been incorporated to succeed the Chehalis Brick & Tile Co. The incorporators are A. F. Bickford, George H. Burrows, F. H. Myers, B. A. Bartholamew, S. S. Snelling and W. H. Essig.

E. Rawson, 50 Irene street, Montreal, Can., wants prices on brick machinery.

The Clay Products Co., of Castle Rock, Col., W. L. Holley, Mgr., will establish a plant to make brick and fireproofing. The capacity will be 50,000 brick and 250 tons of fireproofing per day.

A. Slater, manager of the Okanagan Valley Creamery Co., Armstrong, B. C., will erect a brick plant this winter.

The Pennsylvania Fire Proofing Co., St. Marys, Pa., will install a new engine and generator.

The brick plant of Charles Gunn, at C. street and Erie avenue, Philadelphia, Pa., was destroyed by fire recently, causing a loss of $20,000.

NEW YORK.

New York, Dec. 13.—With 25,000,000 more brick in stack in New York and vicinity than has ever before been held in reserve in December with the exception of 1906, dealers are thoroughly prepared to meet any demand, no matter how great it may be, between now and April first. And here lies a tale.

Four weeks ago the quantity of stacked brick in the Metropolitan district was 75,000,000 below the average. Delayed deliveries of steel had closed down many building operations and there was a well defined rumor afloat to the effect that there was a big supply of brick on hand up the river. In the meantime, barges were held here at distributing docks unable to unload and producers up the river were unable to make shipments into the market at the rate they desired. Prices were held fairly firm at $7.

Conditions continued to grow from bad to worse. The manufacturers did not want to cut down the price of brick in the face of a limited supply in shed, and yet the dealers here could not unload the much needed barges because they had no place to stack and jobs were blockaded because there was no steel being delivered to speak of. At least that was the plaint of the dealers.

In the meantime, winter weather was imminent. If navigation were to close with only a supply of brick in market sufficient to last under normal conditions forty-five days, famine conditions would be almost sure to follow unless resort was had to railroad shipments which, in such an event, would have put the cost of brick way out of sight.

Fortunately, however, mild weather has prevailed up to the present time and the Hudson and Raritan rivers have remained open. But it is dangerous to flirt with weather conditions at this time of the year and big distributors decided that since dealers could not or would not stack at the prices then prevailing, a sort of premium incentive should be offered in the form of a ten-day bargain sale at the wholesale docks to release some of the tied-up barges. This produced the desired effect.

In two weeks, more than 200,000,000 brick were stacked here in this market and twelve barge loads went under cover for winter call. Even the Newark, Jersey City and Hoboken dealers came into the market for Hudson brick at $6.75 a thousand, which price was quoted to those dealers who would promise to unload barges at once.

But this did not seem to be the sole reason for the heavy buying movement. For the last two weeks rumors have been current to the effect that the steel corporation intended to increase its capacity so as to release a larger portion of its structural tonnage to the eastern market. Dealers figured, that with a sudden resumption of steel deliveries there would be a big requisition for common brick for the following reasons:

A large percentage of the buildings which have been held up for lack of steel were in danger of not being completed in time for the opening of the renting season in May. Leasing agents have, in most cases, arranged that new tenants shall move in on May first, when the buildings were scheduled to be completed. Delays in steel deliveries could not be charged up to the building contracts and so the owners, in most cases, have arranged for the employment of larger forces and in some instances over time work, to counteract the effect of the material hold-up and to get the buildings ready for tenants on schedule time.

If there was a shortage of common brick in this market, further delays would have followed and owners would have stood to lose heavily and tenants would have been seriously inconvenienced. So, when the bargain sale was announced, it proved to be doubly welcome. In fact, the manufacturers have had the laugh on them in one sense because the dealers would have been forced into the market within another week anyway.

However, the situation has been materially improved by the temporary easing of the market and brick handlers in general are breathing more freely in the knowledge that no matter how great the demand may prove to be in the next two months, there is no danger of a shortage in this commodity.

Prices Up to Winter Level.

Prices have moved up to normal winter levels and $7.25 is now being asked for covered brick with the prospect of another two shillings being added before January 15. Sales are lighter in volume in both Raritans and Hudsons.

Fire brick, crucible and fire clay dealers here are actively in the market. It will be recalled that during the protracted cold spell of last winter there was a serious dearth of fire clay in this market and it became so serious in time that some of the plants in this district actually faced a shutdown during the time that the clay banks were frozen tight. This year the manufacturers are using more foresight and are buying larger reserves with the result that present prices are decidedly stiff and quotations may go higher before long.

No decision in the case of the Greater New York Brick Company investigation has so far been made. Indeed, it does not seem probable in the light of the crowded condition of Magistrate Freschi's calendar that he will have an opportunity to read the thousands of pages of testimony before next year. In another part of this issue will be found a complete review of the case and the course it must take before actual prosecution can take place, if Magistrate Freschi finally decided that the evidence taken shows actionability.

DETROIT, MICH.

Detroit, Mich., Dec. 11.—There has been an improve- in the demand for brick during the past few months and clay plants in different parts of the city and state are now running full time. Quotations are slightly higher than they were at this season in 1911, and it is confidently asserted by producers and dealers that they will advance still further before the close of winter. The reason for the advance is the inability of the manufacturers to get crude oil at anything like the prices contracted for last season and also that the various refining companies do not show any disposition to enter into agreements for quantities of crude oil during the coming year. The extraordinary demand for gasoline has swayed the refiners into a position where they would rather not sell crude oil, preferring to refine it into gasoline and dispose of the product at a greatly increased price. This time last year, brick manufacturers were able to get crude oil for something like 2½ cents, whereas they are now paying 5 cents, and the refiners are not a bit anxious to sell even at this advanced price. Unless the brick producers can get contracts for the coming season, it will be necessary for them to burn coal and while they can purchase this at practically the same price, there is the additional cost of handling and attending to the furnaces. This means that burning coal at a purchase price the same as the crude oil, means an additional cost for handling and it will be necessary for the brick men to make this up in some way so as to assure them of reasonable profits.

A number of the smaller manufacturers will also be working under the handicap of unfavorable drying weather during the winter and the probabilities are that eight or ten plants will close until spring. Eight or ten manufacturers in this section utilize the sun for drying purposes and because of the very unfavorable weather during the past few weeks and the probabilities of its continuing for some time, plants are likely to be closed down soon, before needless expense is incurred. The larger manufacturers do not depend on climatic conditions for drying their brick and additional trade will be thrown their way with the result that they will be able to demand, and receive, improved prices for their products.

Builders throughout the city declare they have had some difficulty in securing brick during the past month but that the situation is clearing somewhat now and they feel confident they will be able to secure adequate supplies during the winter months. The indications are that building operations will be carried on at even a greater rate during the coming winter than in any winter in recent years. The city is building to the north and northwest and with the likelihood of the opening of a number of large vacant tracts to the northwest there will be a congestion of building in that district. In that particular location, an immense new high school as well as the Detroit General Hospital—the largest hospital in the state—is being constructed and the district will probably be given over almost entirely to residences. It is almost impossible to get a contractor to give assurance of an immediate starting of building operations, and they declare they are so rushed that it will take them several months to work off existing contracts and when this occurs the 1913 season will be quite well advanced.

In the downtown district, a number of tall buildings are being erected and the finishing touches are now being placed on the Dime Savings Bank structure, a 22-story office building, in the heart of the city. This building is constructed of white brick and can be seen nearly 30 miles away, on a clear day.

Peter Smith & Sons, grocers, are erecting a 11-story building on one of the principal downtown corners, while contracts will be let during the next few weeks for a number of large business blocks in the eastern section of the business section. In the north and northwestern sections of the city, residence contractors are almost unanimous in their demands for solid brick or brick veneer houses. A good deal of pressed brick is being used and contractors say this material will be even more popular during the coming season. Throughout the state conditions quite similar to those existing in Detroit are apparent and many manufacturers say they expect to continue producing brick during a greater part of the winter.

A new brick plant is being constructed for the George H. Clippert & Bro. Brick Co., in Springwells township, just on the border of the city limits of Detroit. The new plant will increase the total capacity of the Clippert plants to about 250,000 brick daily. The present output is approximately 150,000 and the new plant will be in operation in a few weeks. The clay bed is now being worked, and it is expected that it will have a working depth of eight or ten and possibly 18 feet. In this district, the clay bed sometimes reaches a depth of 18 feet before becoming contaminated. There will be one double drier in the plant to start with and this addition will make the Clippert plant one of the largest in this section of the country.

"Business has shown considerable improvement during the past few weeks and we anticipate a good demand through the entire winter months," said a representative of George H. Clippert & Bro. Brick Co. "Our plant is operating steadily and we do not anticipate any changes for some time. Brick quotations are somewhat higher than they were at this time in 1911 and the probabilities are that they will go still higher before spring. The price of crude oil will affect the brick market. It is our understanding that a number of manufacturers have met with difficulty in their attempts to induce the refiners of crude oil to enter into contracts for the coming season and it is altogether likely that coal will be used in a great many of the plants that are now rather dependent on oil for their fires. Coal can be purchased just as cheap as crude oil but there is the increased expense of unloading, firing, etc. Coal does not give the same even heat as oil and it has to be watched. This means extra help and brick manufacturers will be forced to make an additional charge on their product because of the increased expense in producing it."

Burke Bros. report a good demand for brick and say prospects are encouraging.

"There has been a good demand for brick throughout the fall and it has been improving during the past few weeks. We expect the trade will continue strong throughout the winter and that there will be a stronger demand for the product next spring than in any spring in the history of Detroit," said a representative of William Clippert. "Our plant has been operating steadily and will continue to do so."

The Michigan Pressed Brick Co. points out that there has been an increasing demand for pressed brick and that this demand will increase next spring when the residence building operations are resumed more extensively.

The Schneider Brick Co. reports an excellent fall and early winter trade.

The Detroit Vitrified Brick Co. is entirely satisfied with conditions and prospects and states that the past season has been one of the best in the history of the concern.

There has been considerable controversy during the past few months over paving operations in Detroit, and with a new mayor in charge as well as practically an entirely new council, the probabilities are that paving brick bids and contracts will be more carefully scrutinized than ever. There has been a great deal of paving during the year and the commissioner of public works has come through with the announcement that these operations will be still more extensive during the succeeding season.

The Lonyo Brick Co. reports a satisfactory business.

The Harrison-Walker Refractories Co. has been enjoying a good demand throughout the season.

The Church Brick Co., with plant at Sibley, Mich., reports an excellent demand. The company is planning some extensions to its plant.

ST. LOUIS, MO.

St. Louis, Mo., December 10.—The year of 1912 is drawing to a close, and while many clayworkers in the various lines have not been as cheerful at all times as might be desired, still the fact stands forth that the year of 1912 has been a good one as a whole.

The yards are all in active operation as yet. A larger share of them will, however, soon close down, for the necessary repairs that will be required after constant running. As most of the yards are well supplied with brick there is no need for long continued operations this winter. There is in reality a slightly larger supply of building brick on hand now than is usually the case at this time of the year. This has not been so much due to lack of demand as to the fact that the plants have been operating pretty steadily for months, and have made a very large amount of brick this season, due to the fact that the weather has been everything that the brick manufacturer could desire. The demand, while fairly good this year, has been a little less active than was hoped for at the beginning of the year. Usually at this time of the year, when the weather gets cold, there is a falling off in the brick business, but this year is an exception, the weather has been so pleasant that building operations have been going right ahead.

The sewer pipe business has fallen off somewhat, but practically all the manufacturers are doing the usual amount of work and are sold up pretty close.

The terra cotta market is holding up fairly well, but no jobs of any consequence have been awarded of late. Factories are operating steadily and all dealers expect a big demand for their products the coming year.

The car shortage, and the shortage of laborers have caused the manufacturers considerable annoyance.

Building operations in St. Louis for the last month show a decrease in comparison with business of November, 1911, to the amount of $532,239; 567 permits for buildings and alterations were issued, the estimated cost being $1,079,432 as compared with $1,611,662 for November, 1911. Of permits issued for new buildings, 131 called for brick at an estimated cost of $845,905, and 161 permits for frame and other structures at an estimated cost of $45,383.

Aside from extensive individual investments, virtually assured, according to agents, an unprecedented amount of capital, it is believed, will be available for building operations the coming year. Revealed during the past month were plans for several skyscrapers which will consume a great deal of brick and terra cotta. Assurances are ample that an 18-story hotel building will be erected on an Olive street corner at an estimated cost of $1,000,000, and an avalanche of apartment-house construction is assured for the coming year.

There are in process of construction in downtown St. Louis, four buildings in the skyscraper category, the Railway Exchange building, a 21-story combination department store and office building of terra cotta and brick, which structure will alter appreciably the skyline of St. Louis. Rising more than 50 feet above any other building in the city, its square white outlines will be visible for many miles up and down the Mississippi. To all within the city it will be an equally striking landmark, for the entire exterior of the mammoth structure will be faced with glazed cream terra cotta furnished by the Winkle Terra Cotta Co. of St. Louis. The glazing of this terra cotta facing is an important factor as it will enable the whole exterior to be easily kept clean in the sooty atmosphere of St. Louis. This will be the only office building in St. Louis to occupy an entire block. For the construction of this building a special city ordinance was passed setting aside the one restricting the height of structures to 206 feet.

The Railway Exchange building will rise 308 feet above the sidewalk. Its total height from the bottom of the foundation to the roof line of the penthouse will be 355 feet. A distinctive feature of the Railway Exchange will be the floors, in which no wood will be used; 3,000,000 common and 500,000 enamel brick will be consumed in this structure, same being furnished by the Hydraulic Press Brick Co., of St. Louis.

Work is well under way on the 14-story hotel structure at the corner of 6th and Market streets, this building will be entirely fireproof. The exterior will be faced with matt-faced brick, dark red brick, with decorations of polychrome terra cotta. Purple mortar will be used. The estimated cost of this structure will be $600,000.

Applications for permits have been filed for three buildings of the Washington University at an estimated cost of $395,000, the material being of concrete and brick.

The valuation of surplus products shipments of stone and clay products from the various counties of the state of Missouri for the year of 1911 amounted to $5,883,542.

Work on the State Capitol building will not commence until spring, as it will require six or eight months for the architects to prepare working plans. Ten sets of drawings submitted in competition for the new Missouri State Capitol were placed on exhibition for architects, contractors and others who were interested.

The Calhoun Clay Products Co., operating a plant in Calhoun county, Illinois, has filed a voluntary bankruptcy petition in the United States District Court at St. Louis, and asked leave to conduct proceedings without advancing the costs of litigation. The firm, according to its petition, is without funds to pay the costs. The petition fixes the firm's liabilities at $85,632.63 and its assets at $12,574.22. Last January stockholders filed a receivership suit in the Circuit Court and asked that the assets of the company be restored by the Calhoun-Clay Manufacturing Co., a $300,000 corporation organized shortly before the filing of the suit to take over the Products company's business. The case was set for trial in December, but the filing of the bankruptcy petition is expected to halt it.

The St. Louis Architectural Club is preparing for an elaborate architectural exhibition in the rooms of the club, 514 Culver Way, the week beginning January 13. Special attention will be given to the display of work from the southwest, and architects from that district will be specially invited and elaborately entertained with banquets, luncheons, automobile rides through the city and inspection trips through the plants producing building materials. An elaborate catalogue of the exhibition will form a feature. In this will be included brick work masterpieces, executed in Italy in the Renaissance, and modern examples of fine brick work.

CHICAGO.

As has always been the case, the first touch of cold weather has caused a falling off in the demand for brick but the abatement is considerably smaller than was estimated, in fact there are more brick being used now than in the spring of many previous years. Building operations are under full swing, with no sign of a let-up, unless the cold becomes too intense.

The paving brick and sewer industries are practically at a standstill, as road and sewer work are very difficult at this time of the year.

One problem that is causing a great deal of anxiety is the fuel oil situation. The price of oil, within the past year, has been practically tripled and numerous brickmakers are at their wits end, trying to use oil as a fuel without increasing the price of brick.

From the information we receive, the hollow block manufacturers will be kept busy taking care of orders in a new field, as this material applied to the construction of high class dwelling houses and bungalows is creating quite a sensation.

The National Brick Co., will suspend work within a few days at its plant which will remain closed until the middle of March. The results of the past year have been extremely satisfactory, not only on account of the number of brick sold but also the good prices received.

The Northwestern Terra Cotto Co., is putting the finishing touches on the Continental & Commercial National Bank building, which is the largest job it has ever undertaken. The contract calls for all exterior decorrations and considerable interior work.

The Calumet Brick Co., after enjoying a very successful and prosperous year will close its plant as is its custom, during the cold spell. They will resume operations about the first of April.

The American Clay Machinery Co., has been awarded the contract for all the machinery for the new Whitacre Fireproofing Co.'s plant at Waynesburg, Ohio. The erection of the Haigh continuous kiln is also under its direction. The new company will manufacture fireproofing materials exclusively and will start operation with one machine having a daily output of 150 tons. The plant is in readiness for the installation of two more machines, with a capacity of 300 tons each just as soon as conditions warrant.

After making a complete resumé of the entire business of the clay world for the past twenty-seven years during which time he has been actively engaged in the brick business, Mr. Bonner of Bonner & Marshall Co., says: "Never before in the history of the industry has clay products witnessed such a state of prosperity as during the past twelve months. This condition is very gratifying but the future outlook has such wonderful development in store for clay products, that brick manufacturers look upon 1912 as only the beginning of a new era and believe that 1913 will far surpass the present record. Our plants will continue making brick throughout the entire winter and building operations will keep on just the same if the weather does not become too severe. We have sold 15,000,000 face brick this year and have many orders to be filled at the present time. One of the largest contracts we have on hand calls for 900,000 face brick, for the new 17-story Butler Bros., building at Randolph and Canal Sts. Another order calling for the same number of face brick to be used in a building at Buffalo, N. Y., is the biggest contract of the kind that was ever awarded by that city."

Notwithstanding the advent of cold weather, the Carey Brick Co., is making as many brick as in the warm weather and if there is any trouble experienced, it is supplying the brick as fast as they are wanted. The Carey plant's output this year has averaged 300,000 per day and the highest record is 358,000 for a ten-hour day. They say, judging from the information on hand that 1913 is the year that is going to make history in the clay industry.

"The Clay Show is going to play an important part in the brick business for 1913," says Mr. White of the Jenkins & Reynolds Co., "and the foremost duty of all manufacturers is to get together and form a national association. "Brick and Clay Record," which without doubt is in a position to know and more fully understand how this cooperation is absolutely necessary and essential to every brickmaker, better than anyone else, is the most ardent supporter of this proposed association and we feel proud of the progress it is making."

The Meacham & Wright Brick Co., now located in the Chamber of Commerce Bldg., has leased newer and larger quarters on the top floor of the City Hall Square Bldg. They will not only have a larger space for their displays but the buyer will have the advantage of selecting his brick under broad daylight. The top floor was secured with that idea in view.

Despite the fact that the demand for sewer pipe at this time of the year is very limited and no laying is done at all the Thomas Connelly Co., will continue to manufacture this product during the winter and will be fully prepared to meet the early spring demand which is expected to be very heavy.

KANSAS.

Salina, Kan., December 9.—The brick business in Kansas, as a whole, has not been satisfactory for the past few years. This is only a culmination of what might have been foreseen, when some 15 years ago there was plenty of natural gas being developed in Kansas and promoters made much of this fact, explaining to investors that by the use of practically free fuel, they could make a fortune in a few years by going into the brick manufacturing business, and as a result, numerous plants were started and in the course of time the market for brick was somewhat overstocked. After a time, the weaker concerns and those lacking the facilities for pushing sales became overstocked and commenced selling their output to supply houses and others, at a reduced price, and in the course of time the other companies decreased their selling price, until in 1908, common brick were being sold for less than cost. By less than cost, we mean on an average, the state over. The effects were first felt by the weaker concerns and one by one they began to die out, and even a number of strong companies quit making common brick and either closed up their plants, moved them to another state, or else turned to the making of paving and face brick, and filled their orders for common brick by buying from those plants selling cheap, thus realizing a small margin of profit, usually 25c per M.

In 1908, there were 89 chartered brick plants in Kansas, 65 of them in operation. Of these 13 were making paving and face brick, and 52 were making common brick.

In the summer of 1912, only 23 plants were in operation, 13 making paving and face brick, and 10 making building brick. On Sept. 1st, the gas companies refused to furnish gas, only where bound by contract to do so; and a number of plants were obliged to close down, and we see by newspaper reports that only 6 plants are now using gas. Three of the six have their own gas and are independent for the time being, but even this fuel is expensive for them, in a way, as they could no doubt sell it for 4 or 5c per M. feet, hence it is worth that much to them, even though they use it themselves and should be figured at that price against the cost of their brick.

Did Not Keep Accounts.

Too many of the brickmakers in Kansas, and especially those in the gas belt did not keep a close enough accounting of the actual cost of their brick, and especially of the depreciation account and were actually selling brick as much as $1.00 per M. less than cost, when they believed they were selling at a profit. This is seen in the figures mentioned above, showing the number of plants in operation four years ago and this year. Had the companies worked together instead of against each other on sales they would have sold just as many brick at a living profit instead of running the business as they have done.

It has simply been a case of the survival of those companies having the most money, the best management, and the best and easiest working shale. From now on, the companies making common brick should be able to sell their output at good prices. In fact, should 1913 be a normal building year in Kansas, we do not see where the necessary brick will come from, as there are hardly enough plants in the state to supply even a less than normal demand. Kansas uses, on an average, about 220,000,000 common brick per year, and granting that there will be 13 plants making common brick next year it will mean an average of over 16 million brick per each plant to make, or from 20 to 25 million for the larger ones and in proportion for the others, down to 1 million for the smallest, and they can scarcely do it.

A glance at the statistics for 1911, shows why the brick business in Kansas slid down to its present condition. They show that the average price received that year for common brick was $3.78 at the plant, while Oklahoma, with cheap gas and cheaper labor than in this state, received $5.18, while the remaining states, bordering on Kansas, received prices as follows:

Arkansas	$6.78
Colorado	6.22
Nebraska	6.40
Iowa	6.64
Missouri	6.02

or an average price of $6.41. Think of it. Labor and fuel is as costly in Kansas, as in the five states last mentioned, and Kansas makers received $3.78 for their brick, and makers in these other states, on an average of $6.41. Brickmakers in these other states have only made a fair margin of profit. We believe that for the past four years Kansas brickmakers have on an average sold their brick for at least $1.00 per 1,000 less than cost, and the figures are proof of our statement.

Must Put Business on Paying Basis.

We can see, however, that a change is at hand and the brick men are already making strenuous efforts to put the business on a paying basis, and as they are now so few in number, there is no reason why they should not succeed. The price is already $1.00 per M. higher than a year ago, and owing to fuel conditions, must continue to raise until Kansas brick men are receiving as much for their product as makers in the surrounding states are receiving, or an average price of at least $6.25.

In the past two years a number of plants have turned to oil as a fuel, and some have turned to coal. Either fuel is expensive, at the present prices, but it is the only thing they can do. At the same time they are, as a matter of course, compelled to sell their output at the same price as the concern having its own gas. Some of the plants now closed down will wait until spring and take their chance of again getting gas from the companies, but this is a doubtful proposition as the receiver for the principal gas company has signified his intention of making all large consumers pay the domestic rate of 27c, instead of permitting the former price of from 4 to 7c, the average being 5½c for brick and glass plants.

For ourselves we are not worried over the situation as we are located in central Kansas, nearly 300 miles by rail from the gas belt, do all of our burning in continuous kilns with Colorado slack, and with satisfaction as regards cost of fuel. We are now preparing to install electric power equipment, and for that matter have been building up a modern plant while our competitors in the gas belt have been hammering one another, even as the Balkan allies and the Turks have been doing for the past 6 weeks, with the exception that this war, with prices for weapons, has been going on for four years.

American Road Builders Meet.

The Ninth Annual Convention of the American Road Builders' Association, which was held at Cincinnati, during the week ending December 7th, we understand, was a success, and was attended by leading good roads enthusiasts from all parts of the country. We regret we could not have published a full report of the sessions, but we are told that the National Paving Brick Manufacturers' Association and the Dunn Wire-Cut-Lug Brick Co., both had creditable exhibits of brick paving.

THE TWIN CITIES AND THE NORTHWEST.

Minneapolis, Minn., Dec. 11.—The year ends with a much more promising state of affairs in the brick trade than was the case a year ago this month. The past season has been erratic, but the latter part of the season has been decidedly better, so that many a yard which could see but poor prospects during the early part of the year, has been able to place a good amount of its product in the past few weeks. The open winter, with plowing going on in the fields through the country up to the first week of December, has also helped to make sales of brick and tile, which in a more severe season would not have been placed until toward spring.

The drain tile business has also been picking up this fall, and a reasonable amount of snow during the winter, and the usual amount of spring floods, will make an active general demand from farmers and others. It is to be observed that in the country the county boards are still arranging for the construction of drainage ditches in Iowa, and Minnesota particularly. In northern Minnesota some very extensive drainage work is just being let. As this country is being rapidly settled up, there will soon be a good demand from private owners for tiling systems on their tracts.

Associations of material men, contractors, builders and others are giving serious consideration to the possible doings of the Minnesota legislature on the matter of lien laws. All interested have been invited to express themselves as to what they think should be attempted before the legislature, on the matter of the laws. Many answer to let them alone, to stand as they are now. Others declare that the lien laws are very little help and they would be glad to see them done away with. But that does not represent the situation. There are several bills to change the situation. One proposes to allow a discharge of a lien by filing a bond. This would compel the material man who sought to collect by lien, if the claim were not paid, to sue a second time, to force collection—the second time on the bond. This would mean additional expense and delay. Another bill proposes to compel those wishing to avail themselves of the lien law, to serve notice upon the owner within sixty days from the time that the last material was furnished or labor performed. This is objectionable in that it causes the contractor to become irritated at serving the notice upon the owner, for the latter would certainly go after the contractor on receiving such notice, and the result would be ill feeling between contractor and material firms.

Conditions point to the passage of the proposed accident compensation bill by the Minnesota legislature. The labor element has named Prof. Lescohier, of the state labor bureau, to represent them. He has approved the bill suggested by the Minnesota Employers' Association, which closely follows the New Jersey law. There are several of which he does not approve however. One of them is the lesser compensation to alien workmen. Another is on the matter of assessing the employe for insurance against accident, it being the theory of the labor element that the employer should bear all the cost. The objection to the former is that employers might discriminate against native laborers, if the foreign labor involved less hazard in the event of accident. It seems likely that the differences will be overcome, and the bill be passed, probably with some amendments, in substantially the form suggested. As it will apply directly to every brick manufacturer in the state, it behooves all manufacturers to become familiar with the law and what it proposes, and to be prepared to raise any objections which might be necessary to protect their interests.

A proposition recently submitted by the Real Estate Board of Minneapolis to the Builders' Exchange, has aroused considerable discussion. The former proposed to take a step which would work toward providing better and more attractive appearing homes of moderate price. It was planned to have a set of some sixty residence plans drawn by Minneapolis architects, to range in cost from $1,500 to $5,000, the board to pay for them. Then to make sure that the estimated cost was a reasonable one, and not like some of the alluring designs shown in certain magazines, which could not be built for twice the estimate—the board proposed to have members of the Builders' Exchange estimate the plans and place a maximum figure at which the building could be erected. But the builders objected to this. They felt that this would be simply offering a figure on which intending builders would dicker. If they could get a lower figure for building their dwelling, they would take it. Otherwise they would expect the estimator of the figure published to make good on the plan—regardless of individual conditions and changes which might have developed between the time that the estimate was made and when the work was taken up.

H. O. Wilson, of Forest Lake, Minn., with associates of that place, have bought the brick plant of R. W. Barstow, at Barnum, Minn., and expects to enlarge and improve the plant materially. Machinery has been ordered for additional production in different lines. When the changes are completed, the new company expects to be able to produce common brick, hollow brick, hollow block, drain tile and flower pots. The plant is to start work in the spring with a production of about 30,000 brick a day.

The retirement of John H. Rich from the presidency of the Red Wing Sewer Pipe Co. naturally arouses curiosity as to his future plans. At Red Wing, there have been reports that he would engage in banking, with one of the banks there in which he was interested; also that he would remove his home from Red Wing. Mr. Rich states that neither is true, and his plans are undetermined. He has given up the detail work, because he wants to have more time in which to travel and enjoy life. As to changing his residence to some other city, he has no present intentions of making any such change. He will be away from the city frequently on trips but expects to make the city his home.

City, N. D. There will be a storage house, 75x100 feet

S. L. Davidson, of St. Paul, and several others, have completed plans for an elaborate clay plant at Valley in size, a grinding room, 30x30, a drier, 150x195, with waste heat drying equipment,

SMASHES NOVEMBER RECORD

In the month ending December 14, "Brick and Clay Record" breaks the record among clay journals set by itself in 1911 for number of new subscriptions and renewals received and the number of pages of advertising printed.

IN CIRCULATION

It ends the month with the addition of more NEW names on the book than ever before in the same period, many of the subscribers paying in advance for at least THREE years, not a few for FIVE years and a few for FIFTEEN years.

In the same period—Nov. 15 to Dec. 14—the renewals by old subscribers far exceeded the number for any one month in the history of the publication. There were more that paid for TWO and THREE years than for one year and not a few paid for TEN and even FIFTEEN years. Here are the totals:

NEW SUBSCRIBERS (Paid in advance in November) - -	149
RENEWALS (Paid in advance in November) - - - -	635
Total subscriptions received - - - -	784

The announcement recently made that this journal would advance its subscription price January 1, 1913, from $1 a year to $2 a year is responsible for the unusual showing and is a decided compliment to the publishers. Old and new subscribers evidently realize the great value to be found in "Brick and Clay Record" and emphasize this point by remitting for several years in advance.

IN ADVERTISING

It printed more advertising in the December issue than it ever has for the same period, and far in excess of the number printed by any other clay journal for a similar period. Here are the figures:

NUMBER OF PAGES (December 1, 1912) - - -	87⅝
NUMBER OF PAGES (December 1, 1911) - - -	71
Gain over 1911 - - - - -	16⅝

THESE FIGURES MEAN:

That both readers and advertisers in the clay product field have the "Brick and Clay Record" habit stronger than ever.

THESE ARE RENEWALS—IS YOUR NAME IN THE LIST?

R. Guastavino Co., New York, N. Y.	5	yrs.
J. W. Leech, Erie, Pa.	3	"
Clyde G. Lamond, Alexandria, Va.	10	"
F. A. Grimes, Shawnee, O.	3	"
Flint Sandstone B. Co., Flint, Mich.	2	"
Jacob Lindley, Tiltonville, O.	2	"
John L. Schroeppel, Collinsville, Ill.	1	"
Axel Rundberg, Chicago, Ill.	3	"
Alton Brick Co., Alton, Ill.	2	"
Denver Press Brick Co., Denver, Colo.	2	"
O. Zimbal Brick Co., Sheboygan, Wis.	2	"
Benj. Broadwell, Kingsville, Ont., Can.	1	"
C. E. Poston, Attica, Ind.	2	"
W. A. Wiethoff, Burlington, N. D.	3	"
U. S. Brick Co., Tell City, Ind.	5	"
Albert Wilson, Bower City, Ia.	2	"
Shackleford Brick Co., Des Moines, Ia.	2	"
The LaSalle Pressed Brick Co., LaSalle, Ill.	2	"
Murray Roofing Tile Co., Cloverport, Ky.	2	"

Ransom C. Cromley, Niagara Falls, N. Y.	1	Years
J. A. Steinberger, Rockwell City, Ia.	2	"
Mr. J. E. Henegar, Vandalia, Mo.	3	"
L. B. Rosenfield, Henderson, Ky.	1	"
Diamond Fire Brick Co., Canon City, Colo.	5	"
Sioux City B. & T. Wks., Sioux City, Ia.	2	"
Ira A. Williams, Gridley, Calif.	2	"
Geo. H. Clippert & Bros., Detroit, Mich.	1	"
Kingsport Brick Corp., Johnson City, Tenn.	1	"
W. F. Sherwood, Payette, Idaho	1	"
Thos. Dawson, Center Junction, Ia.	1	"
C. W. Moore, Winsboro, Tex.	1	"
The Clarion Fire Brick Co., St. Charles, Pa.	1	"
R. Guastavino Co., New York, N. Y.	1	"
John Clifford, Chicago, Ill.	1	"
West Branch Fire Brick Co., New York, N. Y.	1	"
John Van Zandt, Wichita, Kans.	1	"
Albert Lea Brick & Tile Co., Albert Lea, Minn.	1	"
Newman Clock Co., Chicago, Ill.	1	"

West Salem Hollow B. & T. Co., West Salem, Ill	1	yrs.
Bullders Brick Co., Seattle, Wash	1	“
Patoka Brick & Tile Co., Huntington, Ind	1	“
Capt. M. M. Wood, Salt Lake City, Utah	1	“
Columbus Grove B. & T. Co., Columbus, Ohio	1	“
Dillehay Brick Co., Danville, Ky	1	“
Standard Lime & Stone Co., Oakfield, Wis	1	“
Chas. F. Lemble, Valparaiso, Ind	1	“
Southern Sewer Pipe Co., Birmingham, Ala	1	“
Jos. L. Reeves, Beaver Falls, Pa	1	“
The Alliance Clay Products Co., Alliance, Ohio	3	“
Eastern Clay Goods Co., Boston, Mass	1	“
Poston Paving Brick Co., Crawfordsville, Ind	1	“
Smith, Emery & Co., Los Angeles, Cal	1	“
L. R. Spong, West Fairview, Pa	1	“
McFeely Brick Co., Latrobe, Pa	2	“
St. Joseph Pressed Brick Co., St. Joseph, Mo	1	“
Thornton Bros. B. Co., Rudyard, Mich	1	“
B. Jasperson, Kingsville, Ont., Can	1	“
The Heine Chimney Co., Chicago, Ill	1	“
T. A. Gottschalk, Ottawa, O	2	“
Juniata Brick & T. Co., Mifflin, Pa	1	“
Forest Smart, Evanston, Ill	1	“
S. S. Kimbell Brick Co., Chicago, Ill	2	“
The Athens Brick Co., Athens, O	1	“
P. S. Trowbridge, St. Louis, Mo	1	“
Northwestern Clay Mfg. Co., New Windsor, Ill	1	“
Geo. J. Walter, Chatsworth, Ill	3	“
Kaolin & Clay Products, Vineyard Haven, Mass	1	“
The Dunn Brick Works, Erie, Pa	1	“
Atlantic B. & T. Co., Atlantic, Ia	1	“
F. P. Nickerson, Canton, O	1	“
Public Library, St. Paul, Minn	1	“
H. G. Moore, Urbana, Ill	1	“
J. L. Townsend, McDonalds, N. C	1	“
Wm. Radford, Atco, N. J	1	“
Hydraulic Press Brick Co., St. Louis, Mo	1	“
Fred Talbot, St. Louis, Mo	1	“
H. L. Eliot, Delaware, O	1	“
Geo. W. Heald, Chicago, Ill	1	“
Rochester B. & T. Co., Rochester, N. Y	1	“
Chas. L. Blissard, Menomonie, Wis	1	“
L. E. Bentley, Tama, Ia	1	“
The Bloomdale T. & B. Co., Bloomdale, O	1	“
Lyle Clay Cleaner Co., New York, N. Y	1	“
G. P. Damman, New Waverly, Tex	1	“
John Hitch, Ridgetown, Ont., Can	1	“
G. H. Jones, Metcalf, Ill	2	“
Illinois Terra Cotta Lumber Co., Chicago, Ill	1	“
Monongahela Clay Mfg. Co., Monongahela, Pa	1	“
The Finzer Bros. Clay Co., Sugarcreek, O	1	“
Argillo Works, Carbon Cliff, Ill	1	“
Robert Lent, Glasco, N. Y	1	“
Edward Hely, Cape Girardeau, Mo	1	“
Hillsboro Brick & Tile Co., Hillsboro, N. D	1	“
E. Schmatolla, New York City, N. Y	1	“
E. H. Bradley, Layton, Pa	1	“
H. S. Langworthy, Kane, Pa	1	“
Herman Groscup, Altona, Ind	1	“
Wm. Shaw, Trenton, N. J	1	“
C. W. Sheriff, Rapid City, S. D	1	“
Gladding McBean Co., Lincoln, Calif	1	“
Scholl Bros., Lansdale, Pa	2	“
L. C. Wick, Butler, Pa	1	“
The New Jersey Terra Cotta Co., Perth Amboy, N. J.	2	“
Hydraulic Press Brick Co., Indianapolis, Ind	1	“
The Ochs & Frey B. Co., Allentown, Pa	1	“
J. B. Owens Floor & Wall Tile Co., Zanesville, O	1	“
Sumter Brick Works, Sumter, S. C	1	“
The Wabash Clay Co., Veedersburg, Ind	1	“
The Waite-Fullerton Co., Ltd., Winnipeg, Man., Can	1	“
J. M. Cogner, Basic, Va	2	“
A. J. Rossi, Keyport, N. J	2	“
H. M. Winklejohan, St. Henry, O	1	“
Sebewaing Sandstone B. Co., Sebewaing, Mich	1	“
Pearson Brick Co., New Castle, Pa	2	“
R. G. Elsenhart, Horsheads, N. Y	2	“
Indiana Drain Tile Co., Brooklyn, Ind	2	“
The Mosaic Tile Co., Zanesville, O	1	“
W. S. Jenkins, Akron, O	1	“
G. F. Kasch, Akron, O	1	“
Heilman Bros., Tiffin, O	1	“
W. W. Swengel, Bloomsburg, Pa	1	“
L. L. Stephenson, Lovick, Ala	1	“
Jno. R. Dawkins, St. Louis, Mo	1	“
R. B. Hinkley, Luverne, Minn	2	“
Gainesville Brick Co., Gainesville, Tex	2	“
Davenport Brick & Tile Co., Davenport, Ia	1	“
Davenport Brick & Tile Co., Davenport, Ia	1	“
Davenport Brick & Tile Co., Davenport, Ia	1	“
Davenport Brick & Tile Co., Davenport, Ia	1	“
Davenport Brick & Tile Co., Davenport, Ia	1	
Harley Pottery Co., Nashville, Tenn	1	“
T. C. Lundy, Knoxville, Tenn	1	“
Sterling Pattern Wks., Sterling, Ill	1	“
F. M. Monkman, Wanamingo, Minn	1	“
J. W. Weston, St. Louis, Mo	1	“
F. E. Schultz, Albion, Ill	2	“
Western Brick & Supply Co., Hastings, Neb	2	“
Western Brick & Supply Co., Holdings, Neb	2	“
M. Stein, Hastings, Neb	2	“
A. Spaviger, Hastings, Neb	2	“
A. A. Page, Red Wing, Minn	1	“
H. B. Rightmyer, Jamestown, N. Y	1	“
The American Building Br. Co., Cleveland, O	1	“
Y. Miyasaki, McKees Rocks, Pa	1	“
Central Clay Products Co., North Tonawanda, N. Y.	1	“
M. C. Eells, Rankin, Ill	3	“
Superior Brick Co., Fort William, Ont., Can	1	“
Astrid S. Rosing, Chicago, Ill	2	“
W. T. Blackburn, Paris, Ill	1	“
Childersburg Brick Co., Childersburg, Ala	2	“
R. Newbold, Toronto, O	2	yrs.
Cunningham Brick Co., Greensboro, N. C	2	“
J. L. Neilson & Co., Winnipeg, Man., Can	1	“
Chas. F. Frank, Detroit, Mich	1	“
Dr. O. H. Gibbs, Wapakoneta, O	1	“
Dawson Brick & Tile Co., Springfield, Ill	2	“
W. E. Lyons Co., Carthage, Ill	1	“
Grant Falls Brick Co., Grant Falls, N. C	1	“
The Mount Gilead Pottery Co., Mt. Gilead, O	2	“
E. C. Wolcott, Warren, O	3	“
Geo. E. Snowden, New Cumberland, W. Va	5	“
C. D. Pret, North Star, Mich	2	“
P. F. Greaney, Newburgh, N. Y	3	“
James G. Fritz, Birmingham, Ala	1	“
Board of Trade, Lonaconing, Md	1	“
Board of Trade, Frostburg, Md	1	“
Wm. T. Kirby, Frostburg, Md	1	“
Geo. Sloan, Frostburg, Md	1	“
Hope Brick Works, Hope, Ark	1	“
Chattanooga Sewer P. & F. B. Co., Chattanooga, Tenn.	3	“
Sibley-Menge Brick Co., Warrior, Ala	1	“
Knoxville Brick Co., Knoxville, Tenn	1	“
Peter Bergerson, Middleboro, Mass	1	“
Jacob Bursworth Sons, Hartford City, Ind	2	“
J. H. Morton, Jewettville, N. Y	2	“
Arthur N. Pierson & Co., New York, N. Y	5	“
Joseph Lane, Castleton, N. Y	2	“
Dominion Sewer Pipe Co., Swansea, Ont., Can	1	“
Edwin M. Knowles China Co., East Liverpool, O	1	“
South Knoxville Brick Co., Knoxville, Tenn	1	“
E. F. Telling, Assumption, Ill	1	“
Harvey Brick & Tile Co., Harvey, Ia	2	“
Salt Lake Pressed Brick Co., Salt Lake City, Utah	1	“
Southern Clay Mnfg. Co., Chattanooga, Tenn	1	“
Southern Clay Mnfg. Co., Warrior, Ala	1	“
Southern Clay Mnfg. Co., Robbins, Tenn	1	“
John J. Ruckno, Forty Fort, Pa	1	“
The Pursell-Grand Co., Cincinnati, O	5	“
East Gass, Washington, Mich	3	“
Cambria Clay Mnfg. Co., Altoona, Pa	1	“
A. R. Shipley, Neodesha, Kans	½	“
B. S. Waltz, Lawrenceburg, Tenn	1	“
Henry Murphy, Milo, Calif	1	“
W. Irving Kimball, Philadelphia, Pa	1	“
D. E. Young, Woodland, Pa	1	“
Mrs. Jennie M. King, Dahinda, Ill	1	“
W. E. Wallis, Elberton, Ga	1	“
Christian Schleede, Ulster Park, N. Y	1	“
C. F. Herman, St. Joseph, Mo	5	“
Wm. Hoadkinson, Beaver City, Neb	1	“
James McNeen, LaJunta, Colo	1	“
Glens Falls Brick Co., Glens Falls, N. Y	1	“
F. Berman, Perth Amboy, N. J	1	“
P. F. Reid, LaSalle, N. Y	1	“
Jay Terry, Kingston, N. Y	2	“
Hydraulic Press Brick Co., Philadelphia, Pa	2	“
Ayer-McCarel-Reagan Clay Co., Brazil, Ind	1	“
Zeeland Brick Co., Zeeland, Mich	5	“
Kornmeyer Bros., Decorah, Ia	1	“
The Georgia Kaolin Co., Macon, Ga	1	“
Alonzo Rose & Co., Kingston, N. Y	2	“
W. A. Johnson, Denver, Colo	1	“
Wm. N. Weir, Mountville, Pa	2	“
James Park, Hopkins, Minn	1	“
Wm. Hodkinson, Beaver City, Neb	1	“
Herbert J. Sisson, Montreal, Can	1	“
J. W. Reagan, Powell Sta., Tenn	1	“
Frank Negele, Worthington, Ind	1	“
Athens Pressed Brick Co., Athens, Tex	5	“
Streaton Paving Brick Co., Streator, Ill	3	“
Lancaster Brick Co., Lancaster, N. H	2	“
Macomb Sewer Pipe Co., Macomb, Ill	5	“
El Paso Brick Co., El Paso, Tex	1	“
C. R. Harrison, Lucas, Ia	2	“
B. F. Merchant, Denver, Colo	1	“
Wm. F. Merchant, Denver, Colo	1	“
The Midland Brick Co., Peru, Kans	2	“
Geo. Rathjens, St. Paul, Minn	1	“
A. R. Batley, Los Angeles, Calif	1	“
Knapp Brick & Tile Co., Everett, Wash	1	“
Far West Clay Co., Tacoma, Wash	3	“
F. R. Carter, Peoria, Ill	2	“
Central Brick & Tile Co., Fort Dodge, Ia	1	“
Fresno Brick & Tile Co., Fresno, Calif	2	“
Love Wagon Co., Durant, Miss	1	“
W. J. Keays, Madera, Calif	2	“
The Woodland Clay Co., Woodland, Ill	1	“
Somers Brick Co., Atlantic City, N. J	3	“
E. L. Cook, State Farm, Mass	2	“
Berlin Heights B. & T. Co., Berlin Heights, O	1	“
Buffalo Sandstone B. Co., Buffalo, N. Y	1	“
National Fire Proofing Co., Perth Amboy, N. J	1	“
Allen & Shultz, Waynesfield, O	5	“
Shorey & Willis, Cincinnati, O	2	“
A. M. Hochgesang & Sons, Jasper, Ind	3	“
Roche Percee Bd. of Trade, Rochee Percee, Sask, Can.	1	“
Steiger Terra Cotta & Poty. Wks., San Francisco, Cal.	1	“
Andrew Barch, Cleveland, O	2	“
Gebr. Wieman, Brandenburg, Germany	1	“
Gus Ermler, Saspamco, Tex	5	“
Aberdeen Brick Co., Aberdeen, S. D	1	“
Los Angeles Pressed Brick Co., Los Angeles, Cal	5	“
M. N. Whitehurst, Norfolk, Va	1	“
B. Jasperson, Kingsville, Ont., Can	1	“
Baltimore Brick Co., Richmond, Va	2	“
Atlantic Terra Cotta Co., New York, N. Y	1	“
Southern Sewer Pipe Co., Birmingham, Ala	5	“
The Northwestern Terra Cotta Co., Chicago, Ill	3	“
The Northwestern Terra Cotta Co., Chicago, Ill	3	“
The Northwestern Terra Cotta Co., Chicago, Ill	3	“
The Northwestern Terra Cotta Co., Chicago, Ill	3	“
The Northwestern Terra Cotta Co., Chicago, Ill	3	“

Frank D. Haney, Omaha, Neb	1	yrs.
J. Thompson & Sons, Fortuna, Calif	1	“
Albert Steinacker, Park Falls, Wis	1	“
Augustus Reeve, Camden. N. J	1	“
John Hopwood, Menominee, Wis	1	“
D. N. Darling. Douglas, Ariz	1	“
Henry E. Lyon. Blairmore, Alb., Can	1	“
A. L. Macatee & Sons. Houston, Tex	1	“
Henry Hess & Son, St. Cloud, Minn	1	“
The Tregillus Clay Prod. Co.. Calgary. Alb., Can	1	“
Auburn Shale Brick Co., Auburn, Pa	1	“
Harvey Erter. Cecil, O	1	“
Bertler & Sons, Manitowoc. Wis	2	“
W. H. Steep, Seneca, Ill	1	“
E. G. Lewis. New York, N. Y	1	“
Gladbrook Pressed Brick & T. Co., Gladbrook. Ia	2	“
The L. H. Martin Tile Co.. Dwight, Ill	1	“
Austin Brick & Lumber Co., Pontotoc, Miss	2	“
S. Geijsbeek, Portland, Ore	3	“
Geo. Weidlinger. Malvern. O	1	“
Pearl Clay Products Co., Bradford. Pa	1	“
M. Hermes, Wooster, O	2	“
John Watson. Danville, Va	2	“
C. H. Baker, Huntington. Ind	3	“
E. S. Naly, Greensburg. Pa	1	“
O. V. Paye, Bakersfield, Calif	2	“
H. G. Willets, Pittsburg. Pa	1	“
Salem Tile & Merc. Co., Salem, Ore	2	“
Northwest Brick Co., Davenport, Ia	1	“
S. E. Stevens, Fredonia, Kans	1	“
A. E. Hilder, Winnipeg. Can	2	“
F. G. Atkinson. Hainburg, Pa	1	“
David Ebringer. Brainerd. Minn	1	“
Sphar Brick Co., Maysville, Ky	2	“
J. P. Fletcher, Fletcher, N. Car	1	“
Victor McDougal, No. Robinson, O	2	“
F. A. Harris. Waco. Tex	1	“
Standard Sewer Pipe Co., Rome, Ga	1	“
E. D. Rand, Springfield, Mo	1	“
Robertson Brick Co., Birmingham, Ala	1	“
G. K. Schlotterer. Chester, Pa	2	“
E. M. Deal, Newton, N. C	2	“
Thos. F. Pindke, Kempton. Ind	1	“
G. B. Simmons, Greenwich, O	1	“
John Roffers, West DePere, Wis	1	“
H. Slemmer. Upper Sandusky, O	1	“
O. H. Bryan, Parkersburg, W. Va	1	“
Cincinnati Brick Co., Sekitan. O	1	“
Library Assoc. of Poutana, Poutana. Ore	1	“
Bakersfield Sandstone Br. Co., Bakersfield, Calif	1	“
O. S. Quammen, Lemmon, S. D	1	“
San Angelo B. Mnfg. Co.. San Angelo, Tex	2	“
The Clay Products Co., Denver, Colo	1	“
R. B. Tyler, Louisville, Ky	2	“
T. T. Hook, Calgary, Alta., Can	1	“
James P. Prall, Woodbridge, N. J	2	“
The Auglaize Tile Co., New Knoxville, O	1	“
John A. Goodwin, Philadelphia, Pa	1	“
John A. Goodwin, Philadelphia, Pa	1	“
H. L. Grant & Son, Goldsboro, N. C	2	“
Henry Molesky, Dearborn, Mich	5	“
Buffalo Builders Supply Co., Buffalo. N. Y	1	“
The National Tile Co., Anderson, Ind	1	“
Public Service Co., Chicago, Ill	1	“
Illinois Clay Products Co., Nashville, Tenn	1	“
The Newport Pressed Brick Co., Newport, Ky	1	“
W. K. Abbott, Quincy, Ill	1	“
Chas. Guenser & Son, Bowlin, Minn	1	“
Chesley Clemens, Bloomfield, Mo	1	“
John Gundlach, Tulsa, Okla	1	“
Henry Crauder, Germantown, O	1	“
James Florey, Bryn Mawr, Pa	1	“
Jenkins & Reynolds Co., Chicago, Ill	2	“
Atlantic Brick Mnfg. Co., May's Landing. N. J	1	“
John A. Stout. Beaver, O	1	“
C. E. Carpenter, Wahoo, Neb	2	“
W. W. Ittner, Belleville, Ill	2	“
Malcolm M. Morrow, Columbus. O	2	“
Reading Shale Brick Co., Reading, Pa	5	“
Saco Brick Co., Saco, Me	2	“
Pittsburgh Tile Co., E. Liverpool, O	1	“
Caroline Skinners, Thorsby, Ala	1	“
Nova Scotia Clay Works, Halifax, Can	5	“
Moshomusho-Kogyo-Shikenjo, Tokyo, Japan	1	“
Kishiwada Brick Co., Kishiwada, Idnumi, Japan	1	“
M. G. Quinn, Columbia, Mo	1	“
Wm. H. Fenton, Martin's Ferry, O	1	“
Findlay Clay Pottery Co., Washington, Pa	2	“
Grand Ledge Clay Prod. Co., Grand Ledge, Mich	5	“
Ogeechee Brick Co., Union Point, Ga	5	“
D. H. Haeger, Elgin, Ill	5	“
Murray Bros., Kensington, Conn	1	“
The Mitchell Brick Co., Cincinnati, O	1	“
Godchaux Brick Co., Ltd., Abbeville, La	1	“
Reno Press Brick Co., Reno, Nev	1	“
Fred P. Luther, Kingston, N. Y	2	“
F. P. Jones, Seacombe, Cheshire, Eng	1	“
D. W. Phillips, Clayton, Wash	1	“
W. L. Phillips, Alameda, Calif	1	“
California Pottery Co., Inc., San Francisco, Calif	5	“
Chas. Berrick's Sons, Buffalo, N. Y	2	“
Mead Petty, Amherst, O	2	“
J. Brewster Gore, Syracuse, N. Y	1	“
C. A. Marshall, Cresco, Ia	1	“
Jno. N. Gregori, Chicago, Ill	1	“
McQueeny Clay Co., Akron, O	1	“
Chris Mockenhaupt, Plattsmouth. Nebr	2	“
Jacob Melly & Bros., Red Bud, Ill	1	“
Geo. Ogan, Danville, Ill	1	“
E. C. Deacon, Lynchburg, Va	1	“
J. M. McLeod, Washington, D. C	1	“
Lehigh Clay Prod. Co., Lehigh. Ia	1	yrs.
The Owensboro Sewer Pipe Co., Owensboro. Ky	2	“
Wm. Kolb, Jr., Philadelphia. Pa	4	“
Hocking Valley Brick Co., Logan. O	1	“
The W. Booth Lumber Co., Ltd., Toronto. Ont., Can.	1	“
Palmetto Kaolin Co., Columbia, S. C	1	“
The Standard Stone & Brick Co.. Bellaire, O	2	“
Mount Union Refractories Co., Mount Union. Pa	1	“
E. F. Darnell, Montreal. Can	1	“
A. Snyder, Portage la Prairie. Can	1	“
C. T. Wilson, New Sharon, Ia	2	“
The E. Bigelow Co., New London, O	1	“
Jacob Pfeiffer, Columbus, O	3	“
Hannah Coady O'Neill, New Haven. Conn	1	“
Shenango Pottery Co., New Castle, Pa	1	“
Martin Tychsen, Bradford, Ill	2	“
James Stripe, Canton, O	1	“
C. & W. Shiel, Caversham, New Zealand	1	“
H. Bird, Republic, Wash	1	“
F. W. Hall, Madison, Wis	1	“
John Van Zandt, Wichita, Kans	1	“
Acme Pressed Brick Co., Ft. Worth, Tex	3	“
Aug. Rundecusch, Mayville, Wis	1	“
Jacob Newman, San Francisco, Cal	2	“
Geo. W. Camp. Texas City, Ill	6	“
Jas. A. Porterfield, Rosendale, Mo	5	“
S. D. Crook, Dover, Del	1	“
Watsontown Brick & C. Prod. Co., Watsontown, Pa	1	“
National Sales Co., Cincinnati, O	1	“
Excelsior Brick Co., Baltimore. Md	3	“
Louisville Pottery Co., Louisville, Ky	1	“
Cyril Linder, Chicago, Ill	2	“
C. E. Surles, Richmond, Calif	1	“
A. C. Cameron, North East. Md	1	“
Clark Pressed Brick Co., Malvern, Ark	1	“
G. G. Brown, Bessemer, Pa	3	“
H. K. Brundydge, Havana. Fla	1	“
Wm. Hammerschmidt, Lombard. Ill	1	“
The Barr Clay Co., Streator. Ill	1	“
Geo. H. Sandkuhl, Spencerville, O	1	“
Western Terra Cotta Co., Kansas City, Kans	1	“
Park & Tucker, Avery, O	1	“
Samuel J. Oling, Dolton, Ill	1	“
Princeton Electric L. & P. Co., Princeton. Ky	1	“
F. Q. Mason, E. Liverpool, O	1	“
Armstrong Mnfg. Co., Hicksville, O	1	“
Hydraulic Press Brick Co., Baltimore, Md	1	“
W. H. King & Co., Rockford, O	2	“
T. V. Patton, Huntingdon, Pa	1	“
J. W. Spencer & Son, Rocky River, O	1	“
A. C. Gordon, Weiser, Idaho	1	“
J. W. Markham, Traverse City, Mich	1	“
F. H. Goss Brick Co., Tacoma, Wash	2	“
James C. Ross., Somerville, N. J	1	“
E. T. Mapel, Berkeley, Calif	2	“
Rogers Bros., Deshler, O	1	“
Stafford Cleveland, Jewettsville, N. Y	1	“
Buffalo Pottery Co., Buffalo, N. Y	1	“
John J. Gahn, San Rafael, Cal	2	“
A. S. Cunningham, Ione, Calif	1	“
R. Frierwood, Greenwood. Miss	1	“
W. W. Perry, Rome, N. Y	1	“
Sioux Paving Brick Co., Sioux City, Ia	1	“
Chas. R. Tramp, Nebraska City, Neb	1	“
Addison T. Deshman, Spokane, Wash	1	“
P. Marcuson, Seattle, Wash	1	“
Legg Brick Co., Calhoun, Ga	1	“
D. W. Cox, Harrisburg, Pa	3	“
A. E. Wadelin, Wolf, O	1	“
Christopher Steadman, Greenridge, N. Y	2	“
J. Parry Lukens. Philadelphia, Pa	1	“
C. J. Butler, Charleroi, Pa	1	“
F. L. Simmons, Far Rockaway, N. Y	1	“
Alphonse Delecourt & Fils, La Madeleine, France	1	“
L. H. Ricker, Chilton, Wis	1	“
Princeton Brick Co., Brickton. Minn	1	“
W. B. Lawhead, Spokane, Wash	½	“
M. Davelaar Son Co., Milwaukee, Wis	1	“
John P. Hatch, Chicago, Ill	1	“
T. E. Fogarty, Gilbert, Ill	1	“
L. C. Cline, Macon, Miss	1	“
N. Y. Arch. Terra Cotta Co., New York, N. Y	1	“
J. C. Branner, Stanford University, N. Y	2	“
C. N. Adams, Alexandria, La	1	“
L. Klostermeier, Boonville, Ind	3	“
Adams Brick Co., Indianapolis, Ind	2	“
The Canton Pressed Brick Co., Canton, O	2	“
The National Roofing Tile Co., Lima, O	1	“
H. L. Longnecker, Chicago, Ill	2	“
Charlotte Brick Co., Charlotte, N. C	2	“
The Rose Brick Co., Roseton, N. Y	1	“
Beaver Clay Mnfg. Co., New Galilee, Pa	2	“
James Day, Saginaw, W. S., Mich	2	“
The Canton Tile Hollow Brick Co., New Bethlehem, Pa.	5	“
Cliffwood Brick Co., Cliffwood, N. J	1	“
Brazil Clay Co., Brazil, Ind	1	“
Brazil Hollow B. & T. Co., Brazil, Ind	1	“
Wm. Campbell, Brazil, Ind	1	“
Thos. Campbell, Brazil, Ind	1	“
John Weaver, Brazil, Ind	1	“
Morton Weaver, Brazil, Ind	1	“
C. E. Baudisch, Brownsville, Tex	3	“
Illinois Drain Tile Co., Albion, Ill	1	“
Marion Pressed Brick & Tile Co., Marion, Ill	2	“
The Western Pottery Mnfg. Co., Denver, Colo	1	“
Wm. McIntire & Son, Equality, Ill	2	“
Sheffield Brick & Tile Co., Sheffield, Ia	3	“
W. R. Colman, Santa Barbara, Cal	2	“
Red River Brick & Tile Co., Stanton, Ky	1	“
Reliable Tile Co., Livonia, Wis	1	“

Kansas City Terra Cotta Co., Kansas City, Mo	1	yrs.
Fred W. Cheek, Rockyford, Colo	1	“
D'Hanis Brick & Tile Co., D'Hanis, Tex	1	“
United Iron Works Co., Springfield, Mo	1	“
Jas. R. Gilchrist, Lowellville, O	1	“
T. W. Beake, Alta, Utah	1	“
P. P. Sexton, Ewingville, Pa	1	“
C. F. Kaul, Madison, Nebr	5	“
R. T. Terry, Leipsic, O	2	“
Chas. C. Bukowski, Momence, Ill	1	“
Standard Securities, Ltd., Vancouver, B. C	1	“
S. G. Brinkman, Fords, N. J	1	“
A. A. McGonigal, Whitney, Fla	1	“
L. C. Nelson, Coffeyville, Kans	5	“
Wm. G. Mouch, Champaign, Ill	1	“
R. Komori, Taihoku, Taiwan, Japan	1	“
Wm. K. Collins, Norfolk, Va	1	“
Sanders & Walton, Smithfield, N. C	1	“
Atlas Press Brick Wks., Dallas, Tex	1	“
The Mill Hall Brick Works, Lock Haven, Pa	1	“
Clayburn Co., Ltd., Sumas, Wash	3	“
Herman Winkler, Madison, Nebr	5	“
T. H. McMichael, Alton, Ala	5	“
Janesville Red Brick Works, Janesville, Wis	2	“
Pacific Face Brick Co., Portland, Ore	1	“
Baldridge Bros., Illiopolis, Ill	5	“
Olive Hill Fire Brick Co., Olive Hill, Ky	1	“
George T. Graves, Winooski, Vt	1	“
J. H. Bodfish, Coleman, Mich	1	“
The Mansfield Clay Prod. Co., Mansfield, O	1	“
Lucius S. Kendrick, Saginaw, Mich	3	“
Robert P. Dixon, Lincoln, Calif	1	“
The Columbia Fire Brick Co., Canton,	1	“
Chas. Trojovsky, Norway, Ia	1	“
Harry T. Dixon, Denver, Colo	1	“
J. M. Cutshall, Brazil, Ind	5	“
Hank J. Banet, Ft. Wayne, Ind	1	“
Wm. Elliott, Glenennan, Ont., Can	2	“
Maurice Barrett, Leeds, Eng	3	“
Virginia Brick Co., Suffolk, Va	1	“
G. W. Towery, LaGrande, Ore	1	“
Frank E. Vanderhaden, Holton, Mich	1	“
Chas. L. Gohn, Columbia, Pa	2	“
L. N. Sanford, Southold, N. Y	2	“
John Booth & Sons, Bolton, England	1	“
Jose de J. Prado, Boston, Mass	1	“
Pennsylvania Fireproofing Co., Erie, Pa	1	“
Mayer Bros., Frostburg, Md	1	“
F. K. Pence, Zanesville, O	1	“
Acme Brick Co., Marietta, O	2	“
Michigan Sewer Pipe Co., Jackson, Mich	3	“
Kasten & Schmuke P. B. Co., Jackson, Mich	2	“
M. M. Bushong, Ft. Scott, Kans	2	“
The Coffeyville Stoneware Co., Coffeyville, Kans	1	“
Gethmann Brick Co., Gladbrook, Ia	3	“
W. S. Goodrich, Epping, N. H	1	“
William Conway, Philadelphia, Pa	1	“
Oregon Agric. College Library, Corvallis, Ore	2	“
I. Ellisons & Sons, Melbourne, Ky	1	“
Geo. W. Schmidt, Buffalo, N. Y	1	“
Garden City Sand Co., Chicago, Ill	1	“
Cape Girardeau P. B. Co., Cape Girardeau, Mo	1	“
C. J. Peterson, Ellsworth, Wis	1	“
Albert J. Schwarzler, New York, N. Y	2	“
W. B. Fleager, Sheldon, Ill	1	“
Perfection, Kensington, Pa	1	“
J. J. Sabin, Ft. Smith, Ark	1	“
T. H. Brenton, Neligh, Nebr	1	“
C. J. Lewis, Milton, Ont., Can	1	“
Tokyo Higher Technical School, Tokyo, Japan	1	“
Ernest Finch, South Park, O	1	“
Swoyer Bros. Brick Co., Allentown, Pa	1	“
I. N. Warren, Rensselaer, Ind	1	“
C. S. Lawson, Birmingham, Ala	2	“
Perry Carl, Osnaburg, O	1	“
J. M. Mamer, Campus, Ill	5	“
Wm. H. Nixon, Toronto, O	1	“
F. Schaefer, Breslau, Ont., Can	5	“
Jos. Fricke, Brillion, Wis	2	“
M. Dering, Peoria, Ill	1	“
Roche Brick & Tile Co., St. Paul, Minn	1	“
The Columbus Br. & Terra Cotta Co., Columbus, O	1	“
Adolph Lippman, Maryville, Mo	2	“
Dr. T. F. Spencer, Salem, Ill	1	“
P. A. Kanengeiser, Bessemer, Pa	1	“
Jos. Broering, Kansas City, Mo	2	“
Gould & Gould, Chicago, Ill	1	“
Wm. B. LeRoy, Cohoes, N. Y	1	“
Builders B. & Supply Co., Inc., New York, N. Y	1	“
W. S. Dove, Ashley, Mich	1	“
J. G. Braislin, Crosswicks, N. J	1	“
Caleb Smith, McLeansboro, Ill	1	“
Chas. Stunkard, Tulsa, Okla	2	“
J. M. Creswell, Milan, Tenn	3	“
S. R. Mead & Sons, Springerton, Ill	2	“
Acme Pressed Brick Co., Denton, Tex	3	“
Acme Pressed Brick Co., Millsap, Tex	3	“
J. B. McHose, Boone, Ia	1	“
The Delaware Clay Mnfg. Co., Delaware, O	1	“
Carson Brick Co., Charlotte, N. C	1	“
J. H. Suhrheinrich, Evansville, Ind	2	“
Standard Brick Mnfg. Co., Evansville, Ind	5	“
C. C. Hyatt, Norton, Va	1	“
Church Brick Co., Sibley, Mich	1	“
J. F. Shrontz, Cleveland, O	1	“
Western Clay Prod. Pub. Bureau, Kansas City, Mo	3	“
Capital City Vt. Brick & P. Co., Topeka, Kans	1	“
Spokane Pressed Brick Co., Spokane, Wash	2	“
Oscar Wilson, Donnybrook, N. D	1	“
S. C. Mellor, Liberal, Mo	2	“
St. Louis Clay Prod. Co., St. Louis, Mo	2	“
The Lumberman's Supply Co., Springfield, Mo	1	“
The Cherryvale Brick Co., Cherryvale, Kans	1	yrs.
The Stockdale Tile & Brick Co., Carrothers, O	5	“
W. H. Gleason, Jr., Austin, Minn	2	“
Chandler Bros., Sunbury, O	2	“
Lee B. Humphrey, Brookville, Pa	2	“
Buffington & Gilpin, Kittanning, Pa	1	“
Ohio Fire Proofing Co., Nelsonville, O	1	“
E. A. Morse, South Bend, Ind	2	“
Delphi Brick Co., Delphi, La	1	“
Reading Fire Brick Wks., Reading, Pa	2	“
The National Clay Co., Hatton, O	2	“
Chas. H. Heise, Suring, Wis	2	“
Joseph Stretch, Montreal, Can	1	“
J. B. Thompson, Volant, Pa	1	“
Geo. F. Pemberton, Lincoln, Calif	1	“
Jas. K. Eyster, Massillon, O	1	“
The Standard Vitrified Brick Co., Coffeyville, Kans	1	“
G. L. Greenwood, Oshkosh, Wis	5	“
Hydraulic Press Brick Co., Chicago, Ill	5	“
Frank D. Powell, Lenoir, N. C	1	“
Langenberg Brick Mfg. Co., Stevens Point, Wis	1	“
C. W. Flagg, West Terre Haute, Ind	1	“
Mead Bros. & Land, Enfield, Ill	2	“
J. P. Young, Clayton, Mo	1	“
F. E. Tate, Cannon, Minn	2	“
G. A. Kampmann, Shreveport, La	1	“
M. Welch, Point Pleasant, Ky	1	“
J H. Kritenbrink, S. Omaha, Nebr	1	“
Pacific Coast Pottery & T. C. Co., San Jose, Calif	1	“
Rowley Clark, Denver, Colo	1	“
Scott B. Walter, Greencastle, Pa	1	“
W. A. Gossett, Baker, Ore	1	“
Jos. T. Degel, Detroit, Mich	1	“
T. K. Hendrie, Chicago, Ill	1	“
G. W. Dando, Vanport, Pa	1	“
John H. Early, Philadelphia, Pa	1	“
S. M. Lawrence, Jackson, Tenn	1	“
Brampton Pr. B. Wks. Ltd., Brampton, Ont., Can	1	“
Standard Brick Co., Charleston, W. Va	2	“
E. T. Harrison, Waverly, Ill	5	“
Nelson Ostrum, Heron Lake, Minn	1	“
Gold Bros. Brick Co., Big Stone City, S. D	1	“
Corinth Brick Co., Corinth, Miss	1	“
S. L. Larson, Redondo, Wash	1	“
Carquinez B. & T. Co., San Francisco, Calif	1	“
Puntenney Lime Co., Los Angeles, Calif	1	“
Pittsburg Paving Brick Co., Kansas City, Mo	1	“
Earl E. Litz Co., Newark, N. J	2	“
Freeman Fire Brick Co., New Cumberland, W. Va	2	“
Milton Brick Co., Inc., Milton, Pa	1	“
Northampton Brick Co., Ltd., Woodstock, N. B	1	“

NEW SUBSCRIBERS

Is Your Name in the List?

Charlotte Brick Co., Charlotte, N. C	2	yrs.
Childersburg Brick Co., Childersburg, Ala	2	“
W. R. Coleman, Santa Barbara, Calif	2	“
Chas. L. Gohn, Columbia, Pa	2	“
F. H. Goss Brick Co., Tacoma, Wash	2	“
Malcom M. Morrow, Columbus, O	2	“
Mt. Gilead Pottery Co., Mt. Gilead, O	2	“
A. J. Rossi, National Fire Proofing Co., Keyport, N. J	2	“
G. K. Schlotterer, Chester, Pa	2	“
A. Sparger, Hastings, Nebr	2	“
M. Stein, Hasting, Nebr	2	“
W. K. Abbott, Quincy, Ill	1	“
American Building Brick Co., Cleveland, O	1	“
Armstrong Mfg. Co., Hicksville, O	1	“
F. G. Atkinson, Hamburg, Pa	1	“
Atlas Press Brick Works, Dallas, Tex	1	“
Frank J. Banet, Ft. Wayne, Ind	1	“
L. E. Bentley, Tama Brick & Tile Co., Tama, Ia	1	“
H. Bird, Republic Lime Co., Republic, Wash	1	“
Board of Trade, Frostburg, Md	1	“
Brazil Hollow Brick & Tile Co., Brazil, Ind	1	“
Buffalo Builders Supply Co., Buffalo, N. Y	1	“
Buffalo Pottery, Buffalo, N. Y	1	“
C. J. Butler, Charleroi, Pa	1	“
Mark A. Buttonmaker, Champaign, Ill	1	“
Cambria Clay Mfg. Co., Altoona, Pa	1	“
Thos. Campbell, Brazil, Ind	1	“
Wm. Campbell, Brazil, Ind	1	“
A. C. Cameron, North East, Md	1	“
O. D. Carpenter, North, N. C	1	“
Fred W. Clark, Rocky Ford, Col	1	“
Clark Pressed Brick Co., Malvern, Ark	1	“
The Clay Products Co., Denver, Col	1	“
Chesley Clements, Bloomfield, Mo	1	“
L. C. Cline, Macon, Miss	1	“
M. Davelaar & Son Co., Milwaukee, Wis	1	“
Robt. P. Dixon, Lincoln, Cal	1	“
David Ebinger, Brainerd, Minn	1	“
Harvey Erter, Cecil, O	1	“
Wm. H. Fenton, Martin's Ferry, O	1	“
J. P. Fletcher, Fletcher, N. C	1	“
T. E. Fogerty, Gilberts, Ill	1	“
Chas. F. Frank, Detroit, Mich	1	“
Jas. R. Gilchrist, Lowellville, O	1	“
Gladbrook Pr. Brick & Tile Co., Gladbrook, Ia	2	“
Godchaux Brick Co., Ltd., Albeville, La	1	“
Gurdon Brick Co., Gurdon, Ark	1	“
J. Brewster Gore, Syracuse, N. Y	1	“
Granite Falls Brick Co., Granite Falls, N. C	1	“

Chas. Guenser & Son, Bowlus, Minn	1	yrs.
Gurdon Brick Co., Gurdon, Ark	1	“
F. W. Hall, Madison, Wis	1	“
Frank D. Haney, Omaha, Neb	1	“
F. A. Harris, Waco, Tex	1	“
John P. Hatch, Chicago, Ill	1	“
Illinois Drain Tile Co., Albion, Ill	1	“
W. S. Jenkins, Akron, O	1	“
W. A. Johnson, Denver, Col	1	“
Juniata Brick & Tile Co., Mifflin, Pa	1	“
Kansas City Terra Cotta Co., Kansas City, Mo	1	“
W. J. Keays, Madera, Calif	1	“
W. Irving Kimball, Philadelphia, Pa	1	“
Wm. T. Kirby, Frostburg, Md	1	“
Knapp Brick & Tile Co., Everett, Wash	1	“
Edwin M. Knowles China Co., East Liverpool, O	1	“
W. B. Lawhead, Spokane, Wash	1	“
Thos. F. Lindley, Kempton, Ind	1	“
Louisville Pottery Co., Louisville, Ky	1	“
J. Parry Lukens, Philadelphia, Pa	1	“
Mansfield Clay Products Co., Mansfield, O	1	“
James Martin, Orchard Park, N. Y	1	“
L. H. Martin Tile Co., Dwight, Ill	1	“
D. S. Mayer & Sons, Ridgely, Md	1	“
A. A. McGonegal, Whitney, Fla	1	“
J. M. McLeod, Washington, D. C	1	“
McQueeney Clay Co., Akron, O	1	“
Mitchell Brick Co., Cincinnati, O	1	“
E. W. Moser, Perrysburg, O	1	“
Wm. G. Mouch, Champaign, Ill	1	“
Mt. Union Refractories Co., Mt. Union, Pa	1	“
Murray Bros., Kensington, Conn	1	“
National Sales Co., Cincinnati, O	1	“
Geo. Neidlinger, Malvern, O	1	“
Northwest Brick Co., Davenport, Ia	1	“
Palmetto Kaolin Co., Columbus, S. C	1	“
James Park, Red Wing Sewer Pipe Co., Hopkins, Minn.	1	“
Pearl Clay Products Co., Bradford, Pa	1	“
D. W. Phillips, Clayton, Wash	1	“
Pittsburgh Tile Mfg. Co., East Liverpool, O	1	“
Jose de J. Prado, Havana, Cuba	1	“
Princeton Brick Co., Brickton, Minn	1	“
Princeton Brick Co., Princeton, Ky	1	“
O. S. Quammen, Lemmon, S. D	1	“
Red River Brick & Tile Co., Stanton, Ky	1	“
Jos. L. Reeves, Beaver Falls, Pa	1	“
Robertson Brick Co., Birmingham, Ala	1	“
Jas. C. Ross, Somerville, N. J	1	“
Aug. Ruedebusch, Mayville, Wis	1	“
Sanderr & Walton, Smithfield, N. C	1	“
Geo. H. Sandkuhl, Spencerville, O	1	“
Shenango Pottery Co., New Castle, Pa	1	yrs.
F. L. Simmons, Far Rockaway, N. Y	1	“
Caroline Skinness, Thorsby, Ala	1	“
H. Slemmer, Upper Sandusky, O	1	“
Standard Lime & Stone Co., Oakfield, Wis	1	“
Standard Sewer Pipe Co., Rome, Ga	1	“
C. E. Surles, Richmond, Calif	1	“
Frank L. Thomas, Bremen, Ind	1	“
G. E. Towery, La Grande, Ore	1	“
J. L. Townsend, McDonalds, N. C	1	“
Virginia Brick Co., Suffolk, Va	1	“
A. E. Wadelin, Wolf, O	1	“
John Weaver, Brazil, Ind	1	“
Morton Weaver, Brazil, Ind	1	“
M. N. Whitehurst, Norfolk, Va	1	“
H. G. Willetts, Pittsburg, Pa	1	“
D. E. Young, Woodland, Pa	1	“
Henry E. Lyon, Blairmore, Alta., Canada	1	“
Standard Securities, Ltd., Vancouver, B. C., Canada	1	“
Superior Brick Co. Ltd., Ft. William, Ont., Canada	1	“
A. E. Hilder, Winnipeg, Man., Canada	2	“
Maurice Barrett, Cliff Lawn, Hyde Park, Leeds England	3	“
Roche Brick & Coal Co., St. Paul, Minn	1	“
F. E. King, Tampico, Mexico	1	“
Warren Overpack, Medicine Hat, Alta., Canada	1	“
Jeff N. Miller, Houston, Tex	1	“
Dr. R. W. Knox, Houston, Tex	1	“
J. M. Dorrance, Houston, Tex	1	“
R. J. Kleberg, Kingsville, Tex	1	“
Acme Pressed Brick Co., Millsap, Tex	3	“
Acme Pressed Brick Co., Denton, Tex	3	“
C. S. Lawson, Birmingham, Ala	2	“
Perry Carl, Osnaburg, O	1	“
P. A. Kanengeiser, Bessemer, Pa	1	“
Builders Brick & Supply Co., New York, N. Y	1	“
Gould & Gould, Chicago, Ill	1	“
I. N. Warren, Rensselaer, Ind	1	“
Ernest Finch, South Park, O	1	“
Perfection, Philadelphia, Pa	1	“
Albert J. Schwarzler, New York, N. Y	2	“
O. D. Carpenter, Worth, N. C	1	“
Delhi Brick Co., Delhi, La	1	“
J. B. Thompson, Volant, Pa	1	“
Ohio Fire Proofing Co., Nelsonville, O	1	“
W. H. Gleason, Jr., Austin, Minn	2	“
Cherryvale Brick Co., Cherryvale, Kas	1	“
Lumbermen's Supply Co., Springfield, Mo	1	“
S. C. Mellor, Liberal, Mo	2	“
J. F. Shrontz, Cleveland, O	1	“
S. A. des Briqueteries & Ceramiques, Lustin, Belgium	1	“

HERE'S THE WAY OUR SUBSCRIBERS WRITE

J. M. Coyner, Basic, Va.—"I like 'Brick and Clay Record' very much and think it worth many times the subscription price to anyone interested in Brick—the best building material in the world. Every man contemplating building should take it. Your journal is well worth as much, yea even more than any other in the field."

Burt Ogburn, Phoenix, Ariz.—"'Brick and Clay Record' is sure worth the price of subscription and then some."

Wabash Brick Co., Terre Haute, Ind.—"We derive a great deal of valuable information from 'Brick and Clay Record's' reading columns and we certainly wish you continued success."

La Salle Press Brick Co., La Salle, Ill.—"We certainly consider 'Brick and Clay Record' the very best publication of its kind in circulation."

J. A. Cameron, Comanche, Okla.—"'Brick and Clay Record' is a splendid journal and I appreciate its regular visits."

John McAlister, Columbus, O.—"I am seldom at home but among the pleasures awaiting me on my return is that of reading your journal. I count the time well spent in perusing its columns."

G. W. Songer, Prop. Brazos Brick & Drain Tile Works, Rosenburg, Tex.—"We find some mighty valuable articles in your journal and some of them alone, are worth the entire year's subscription. We think the magazine is worth three times the price you ask for it. Business in this part of Texas is good. In fact, we cannot take care of all the orders that come to us. The people are gradually waking up to the great benefits to be derived from draining their land and as a consequence the drain tile department of our business is rapidly increasing."

Mr. Frank R. Spulak, Canby, Ore.—"While I am but a new subscriber to your excellent paper, I read every copy from cover to cover and enjoy it very much. I wish your paper continued success."

J. B. Lorenson, Harlan, Iowa.—"'Brick and Clay Record' is certainly a very good and useful journal for anyone engaged in the manufacture of brick as it keeps one in touch with the thoughts of other successful clayworkers, and the best and most up-to-date methods of clay manufacturing."

B. F. Neff & Son, Bryan, Ohio.—"We prize 'Brick and Clay Record' very highly and we do not see how we could get along without it. We have had a fair year and have sold out about everything we carried over from last year so that we are now stocking up again."

The Clyde Brick & Tile Works, Clyde, O.—"We enjoy your good journal very much and find in it many valuable and helpful suggestions. Hoping and trusting that the Democrats will not be so elated over their victory as to cause radical and sweeping changes in the financial situation, we will continue with our very good business."

Harold Copping, Kankakee, Ill.—"Any one who is a subscriber to 'Brick and Clay Record,' must be fully aware of the extremely good value he is getting at a very low cost."

M. J. Lee Brick & Tile Co., Paola, Kans.—"'Brick and Clay Record' is a dandy and we don't want to miss a single copy."

The Claycrafter Supplement

GREAT INVENTIONS

—A PARALLEL—

When the Wright Brothers, of Dayton, Ohio, a few short years ago, skimming over the ground and rising, soared through the skies in the craft of their new invention, the world stood petrified in amazement, and at once pronounced them among the greatest inventors of the age.

When, a short time thereafter, announcement was made of the perfection in the method of burning of clay wares in continuous chambered kilns with producer gas, the world—being ready for anything—marveled not, but looked upon it simply as another progressive step in the economics of mankind.

Sober afterthought, however, will give to each its proper place in the economy and conservation of natural resources, and the genuine advancement and welfare of the race.

The one marks an epoch of novel and startling mastery over the air, which from the beginning had baffled man's efforts to stem its depths.

The other, a revolutionizing of the methods of generation and application of heats to the burning of clay wares.

The one, a spectacular and startling innovation of momentary wonder and interest, but of doubtful benefit or lasting utility to the masses.

The other a complete alteration in the utilization of fuel and a resultant economy that will be immediately felt throughout, not only all branches of the clayworking industry, but directly among all users of clay ware, represented by every member of civilized society.

We live in an age of burned clay.

Brick, Tile, Terra Cotta and Sanitary Ware now enter more or less into the lives, comforts and utility of all.

Pavements and Sewerage supply their quota to the facility of transportation and sanitation of our communities.

Drain tile occupies a prominent position in the reclamation of our lands.

Refractories make possible the operation and progress of our industries.

While Pottery, in its indispensable and countless forms, supplies the daily needs of each of us in myriad ways.

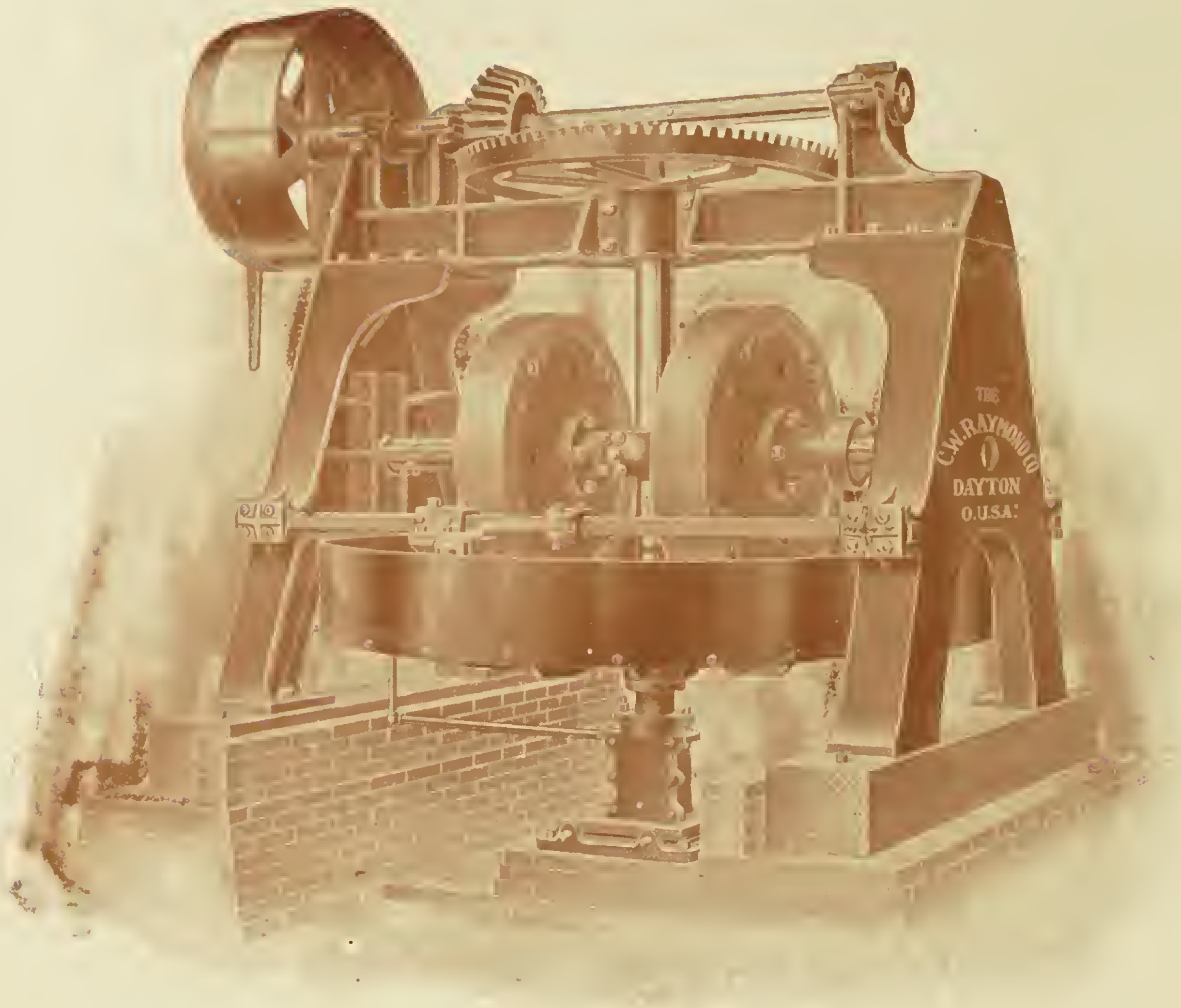
A method that is destined to work such great facility and an economy of one-half of the fuel requirements in such a large and widespread department of human endeavor, with its resultant vitality of interest and concern to all humankind, cannot fail to take its place as one of the truly great inventions of the century—and, indeed—of all time.

Such an invention is now being shown to Clayworkers throughout the country, and is being installed by progressive clay manufacturers everywhere.

Reports from users indicate a saving of from 50 to 60 per cent of former fuel requirements, and a great improvement in the color, quality and uniformity of their ware.

Wideawake manufacturers everywhere are investigating this great Continuous Kiln, Producer Gas Fired.

Full information will be gladly forwarded on application to the C. W. Raymond Company, Dayton, Ohio, U. S. A.



Raymond Heavy Duty Dry Pan

For *twenty years* the
Standard Pan of the World

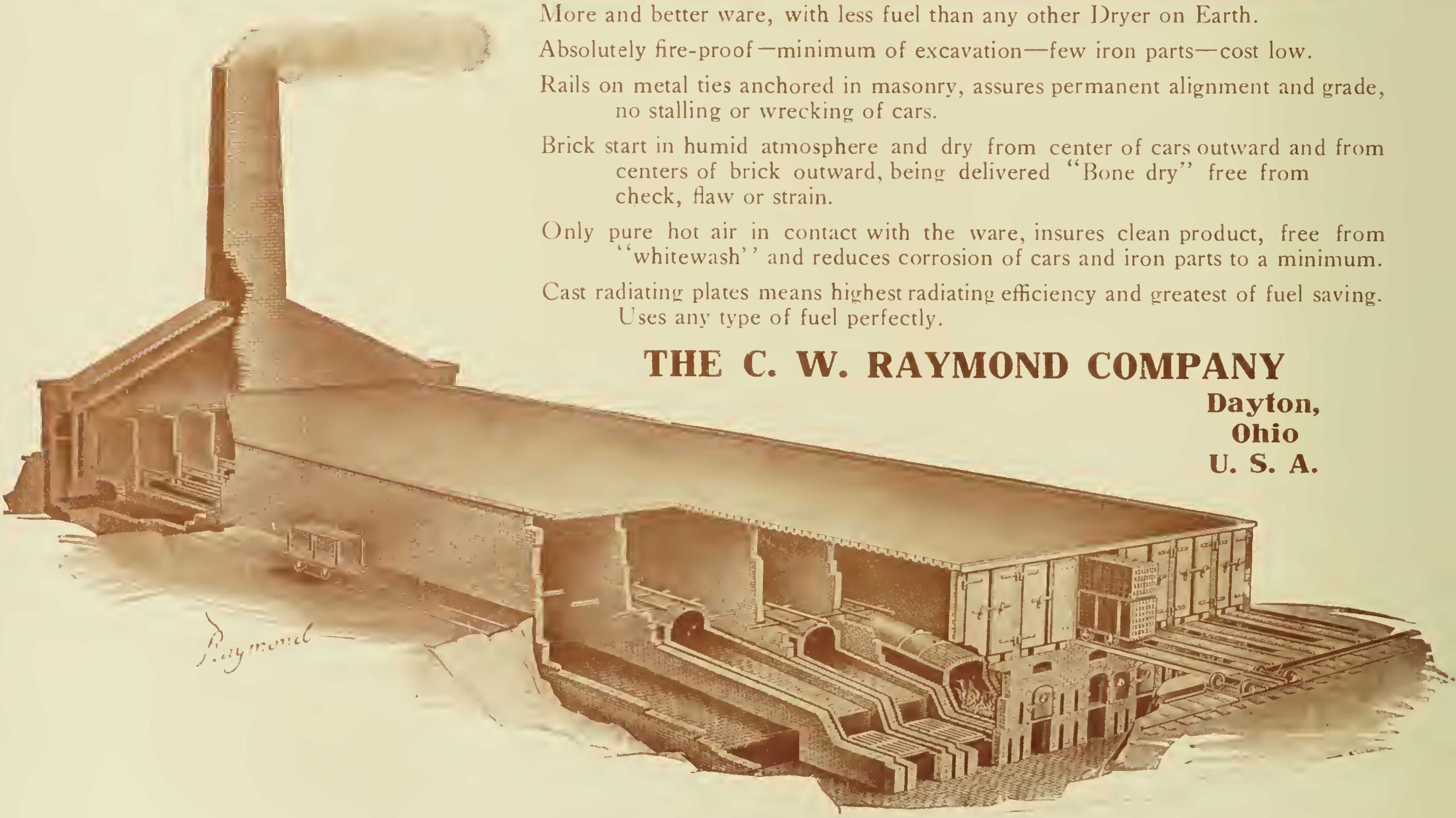
Heaviest in Mullers and the
strength to support them.

Largest in Screening Surface
And the ground material to screen.

Greatest in Weight and
Every pound "Fighting Weight"

Famous Non-Heating Step.
Will run either direction
with straight belt, from same
setting. Many distinct features.
Write today.

The Raymond Metallic Radiation Dryer



More and better ware, with less fuel than any other Dryer on Earth.

Absolutely fire-proof—minimum of excavation—few iron parts—cost low.

Rails on metal ties anchored in masonry, assures permanent alignment and grade, no stalling or wrecking of cars.

Brick start in humid atmosphere and dry from center of cars outward and from centers of brick outward, being delivered "Bone dry" free from check, flaw or strain.

Only pure hot air in contact with the ware, insures clean product, free from "whitewash" and reduces corrosion of cars and iron parts to a minimum.

Cast radiating plates means highest radiating efficiency and greatest of fuel saving. Uses any type of fuel perfectly.

THE C. W. RAYMOND COMPANY

Dayton,
Ohio
U. S. A.

The Claycrafter Supplement

Drying of Clay Ware.

A few years since, when artificial drying of brick and clay wares began to come into general use, the scientific principles underlying this important and vital operation were somewhat vague and incompletely understood, a fact that large numbers of old existing dryers today, with their low efficiency, large fuel requirements and excessive repair costs, will attest.

Founded on this widespread experience throughout the field and coupled with the advanced thought and study of eminent chemists and engineers, the leading dryers of today, both in substantial and scientific construction and efficiency in operation, represent as great an advance in both economy and efficiency as perhaps any other department of clay works equipment.

Shorn of all high sounding terms, the correct rudiments and final principles involved in the drying of all clay wares might best be summed up as follows:

Heat and **Circulation** under proper **Combination, Application** and **Control.**

Heat by itself being worse than worthless.

Circulation alone, being wholly inadequate.

A proper combination of the two, however, with means for scientific application to the ware to be dried in connection with a suitable system of regulation and control to meet successfully the needs of varying conditions, and you have the successful drying equipment of the present day.

For convenience we may subdivide the entire drying process into three stages, which in actual working would naturally merge into one continuous and progressive operation. Then these principles, properly applied, will effect the desired results in the following manner:

In the first stage of the drying the ware, passing into a warm, moist atmosphere, is allowed sufficient time to warm through before progressing into the higher heats ahead. The air in this section of the tunnel, while quite humid, should never be allowed to reach saturation or "dew-point," or the result will be "sweat" or condensation on the ware, with likelihood of "whitewash" on the finished goods. Practically no moisture is extracted from the ware during this stage.

Passing forward into the second or drying section, with its increasing heats, the clay ware readily gives up its moisture in the form of vapor, which is immediately carried away in the steady flow of circulation to the outlet.

Arriving at the third or finishing section, the ware, now being nearly dry, encounters very hot, rarified air which heats the ware through and through to a point sufficient to drive every atom of moisture therefrom.

Brick and clay ware dried in this manner will emerge from the dryer "bone dry," free from check, flaw or strain.

The above principles and process are the gradual evolution and outgrowth of many years of experience with faulty systems, and instead of being private information, is a matter of general and exact knowledge.

This leaves the clayworker—as a prospective buyer—in the position of basing his selection on the concrete merits of the equipment under consideration; its substantial and correct construction, its efficiency in operation, and its Economy of Fuel.

Matters that have a direct bearing and a distinct "rap right on the pocketbook."

Full information will be gladly forwarded on application to The C. W. Raymond Co., Dayton, Ohio, U. S. A.

YOU KNOW THAT

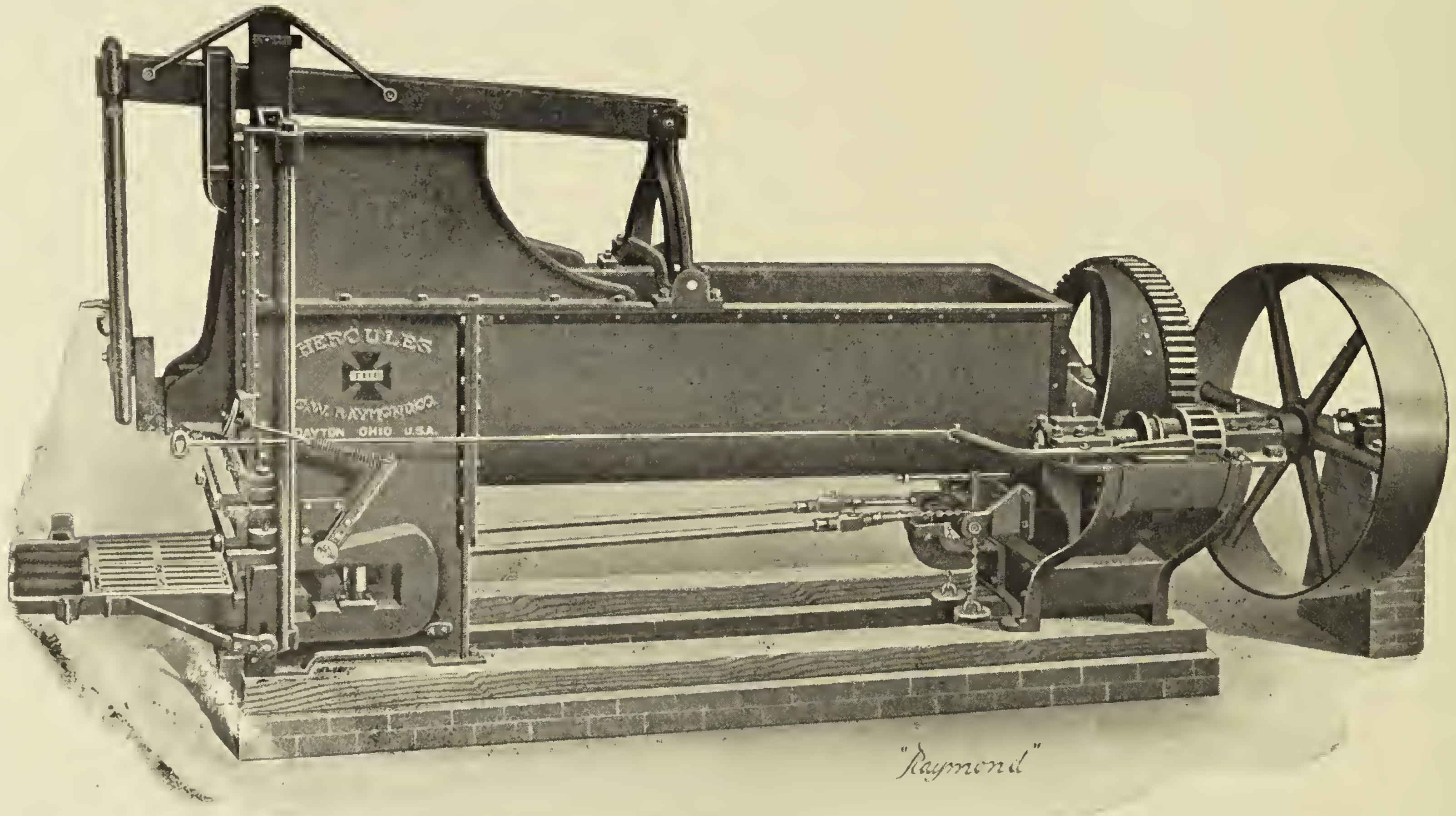
Hand Made Fire Brick

Have Always "HAD THE CALL" and "COMMANDED THE PRICE."

They do yet—*Except* in sections where we have installed our

MAMMOTH **"HERCULES No. 4"** **SOFT MUD**

—Fire Brick— **BRICK MACHINE.** **—Building Brick—**


HERCULES
C.W. RAYMOND CO.
DAYTON OHIO U.S.A.
"Raymond"

Now they are "Up in the Air"
"Can't tell the difference."

If there is any, it would seem to be in the *greater uniformity* of the machine made brick, its more even size and shape and abrasive toughness,—without sacrificing any of the well known qualities of the hand made article, its porosity, homogeneity, refractoriness and stability in sudden heating and cooling.

LEADING FIRE BRICK MANUFACTURERS EVERYWHERE ARE INSTALLING THIS MACHINE.
Why Not You? A line to us will give you the desired information.

THE C. W. RAYMOND COMPANY,

The Strongest Power in the World of Clay Working Machinery,
DAYTON, OHIO, U. S. A.

The Claycrafter Supplement

A FEW FIGURES

Have You Your Pencil Handy?

WE'LL say you are making 50,000 brick per day—1¼ Millions per month—15 Millions per year.

Your present fuel requirements are ½ Ton of Coal, costing $2.00 per Ton, making $1.00 per M brick for this item.

It's easy to see that $15,000.00 will have to be "dug up" from some source to satisfy the coal man.

What if the coal man should turn around and rebate you the cold sum of $9,000.00? "Heart disease," did we hear you say?

We don't know how you **stand on rebates,** but will venture that your hand would be out to receive that "juicy" check—ours would—and you'd say, "just like finding it," or "like getting money from home."

Now **there's** where we come in. We're **not coal men.** But, we have the **wherewith** to **"beat the coal game."**

The only difference—**you keep the money**—it doesn't have to pass the hazard of the "Providence appointed" coal baron's fingers.

His sense of philanthropy might fail him at the psychological moment, and you'd be **"holding the sack,"** as you are today.

We can cite (also "sight") you to a lot of people who are thus **rebating themselves** nowadays. Some larger plants, some smaller.

They are the happy possessors of a **Raymond, Producer Gas Fired, Continuous Kiln** and a **smile that won't come off.**

They are using about ⅓ of their former fuel, means ⅓ as much coal to handle (and pay for), and ⅓ as much ash; also ⅓ as much firing expense, and a great labor saving in loading and discharging kilns; also a great reduction in kiln repairs and turning out all hard, clean, rich colored ware from crown to floor; also no smoke, no dirt—cleanliness, control, system, all of which spells **success on any yard.**

Never have you made an investment that would **begin to compare with this one.**

Remember, **you don't buy this kiln;** it **pays for itself times over,** leaving you in a **commanding position** in the trade, an **established power** in your chosen line.

Hundreds are seeking information today, why not you? Whether in shape to consider the matter now or later the wide-awake thing is to keep posted.

Now for that pencil. Without obligating yourself in any way, the fullest information can be secured by addressing The C. W. Raymond Co., Dayton, Ohio, U. S. A.

ECONOMY in Raymond Equipment

DOES NOT END with THE PRICE

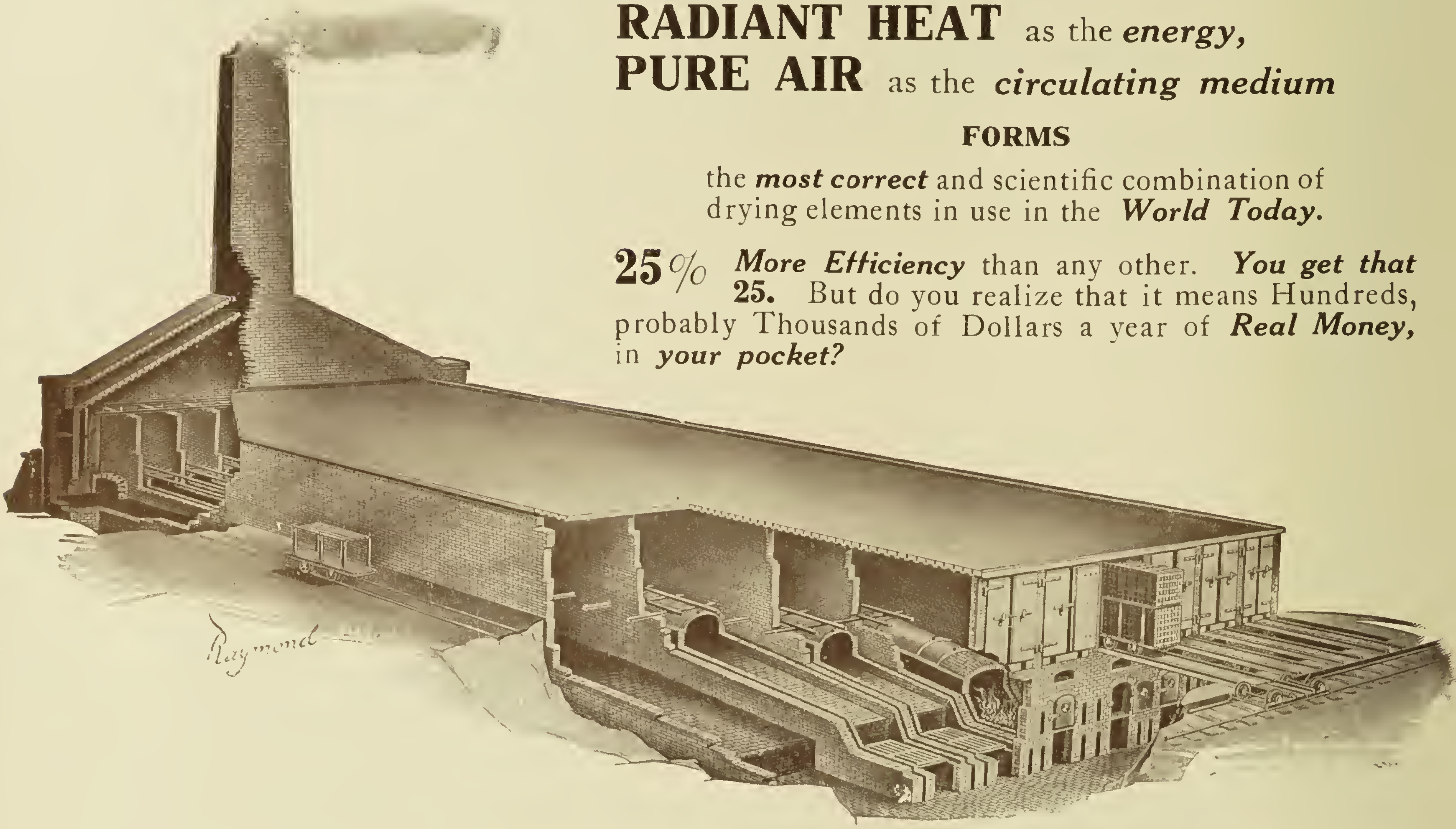
Take an Instance—
THE METALLIC RADIATION DRYER

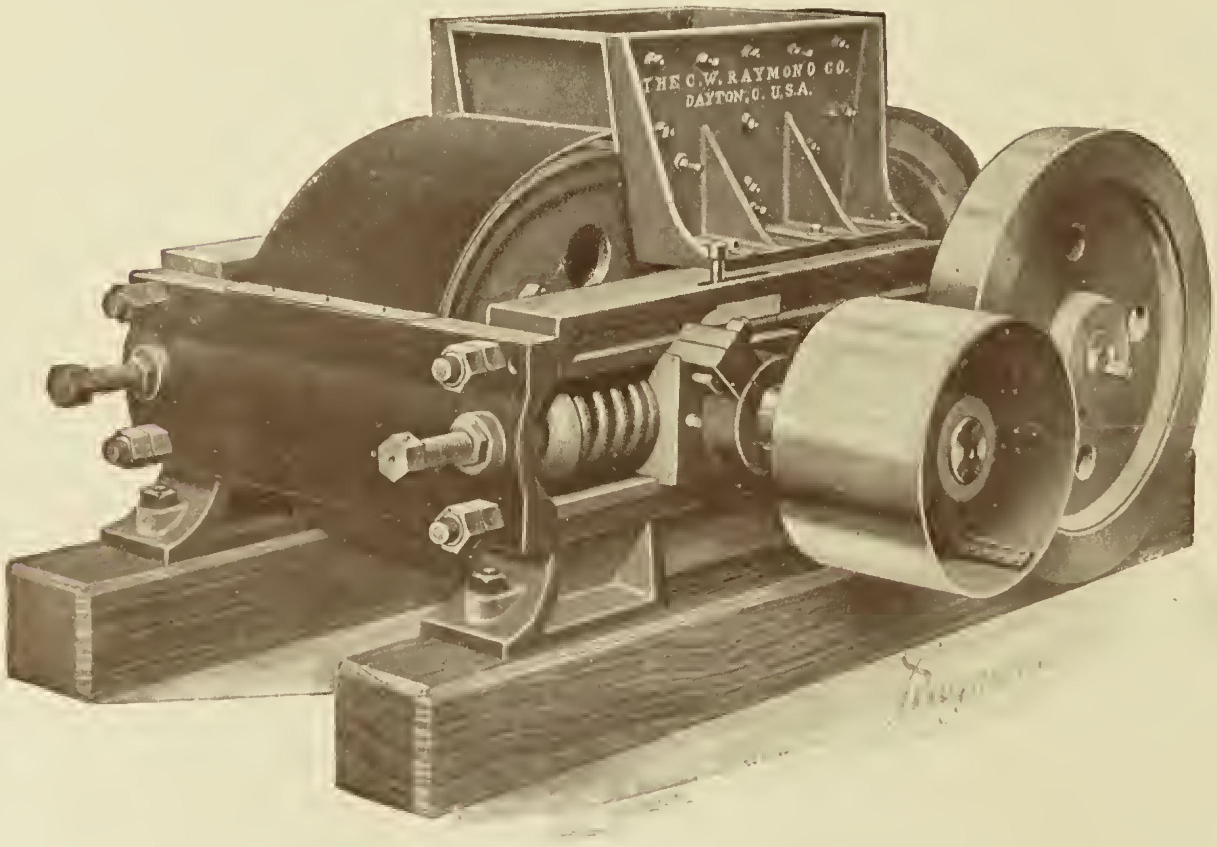
IRON, as the ***foremost radiating material*** in use,
RADIANT HEAT as the ***energy,***
PURE AIR as the ***circulating medium***

FORMS

the ***most correct*** and scientific combination of drying elements in use in the ***World Today.***

25% ***More Efficiency*** than any other. ***You get that*** **25.** But do you realize that it means Hundreds, probably Thousands of Dollars a year of ***Real Money,*** in ***your pocket?***




THE C.W. RAYMOND CO.
DAYTON, O. U.S.A.

THE RAYMOND EQUAL ROLL CRUSHER

A STERLING MACHINE

For Heavy Duty, High Capacities and Steady Operation.

Both Rolls Smooth for fine grinding. —One Roll rigid, the other flexible. —All Bearings angular to reduce strain.—Extra Heavy. Many Exclusive Features. Write today.

The C. W. Raymond Co.

The Strongest Power in the World of Clayworking Machinery

DAYTON, OHIO U.S.A.

The Claycrafter Supplement

IRON

GREAT POSSIBILITIES

You know a good brick machine,—after trying it out thoroughly.

Can't tell much by appearances,—you know that.

This led us to the idea "possibly better grades of metal."

Meant much research,—many analyses,—myriad tests.

The results are almost incredible.

An instance,—lately we were called upon to furnish roof truss bars for a double tunnel dryer.

Our usual books of reference were consulted,—likewise a leading architect, also a competent structural engineer.

All figures practically agreed on a certain section to support a weight of 350 pounds each, with safety factor at 4.

The cut shows two of these bars, with two-inch bearings at the ends, supporting a load of 8,000 pounds of pig iron. (They broke at 8,500 pounds.)

Three times the technical strength of metal of this class.

Think what it means in the make-up of our machinery,—or rather **your machinery,** for we have no idea of keeping it.

What is true of our cast iron, is equally true of our cast steel, rolled steel, hammered steel, bronze and beering metals, that enter into the make-up of **Your Machinery.**

Always good,—**Raymond Machinery** and **Equipment** is **better today,** in **design** and **quality** and **efficiency,** than at **any time** during the **thirty-two years** of our progressive growth.

SIMPLICITY

is a Mighty Good Quality in Brick Machinery.

Great Strength and Freedom from Repairs are others

The Berg Dry Press

Is the Embodiment of

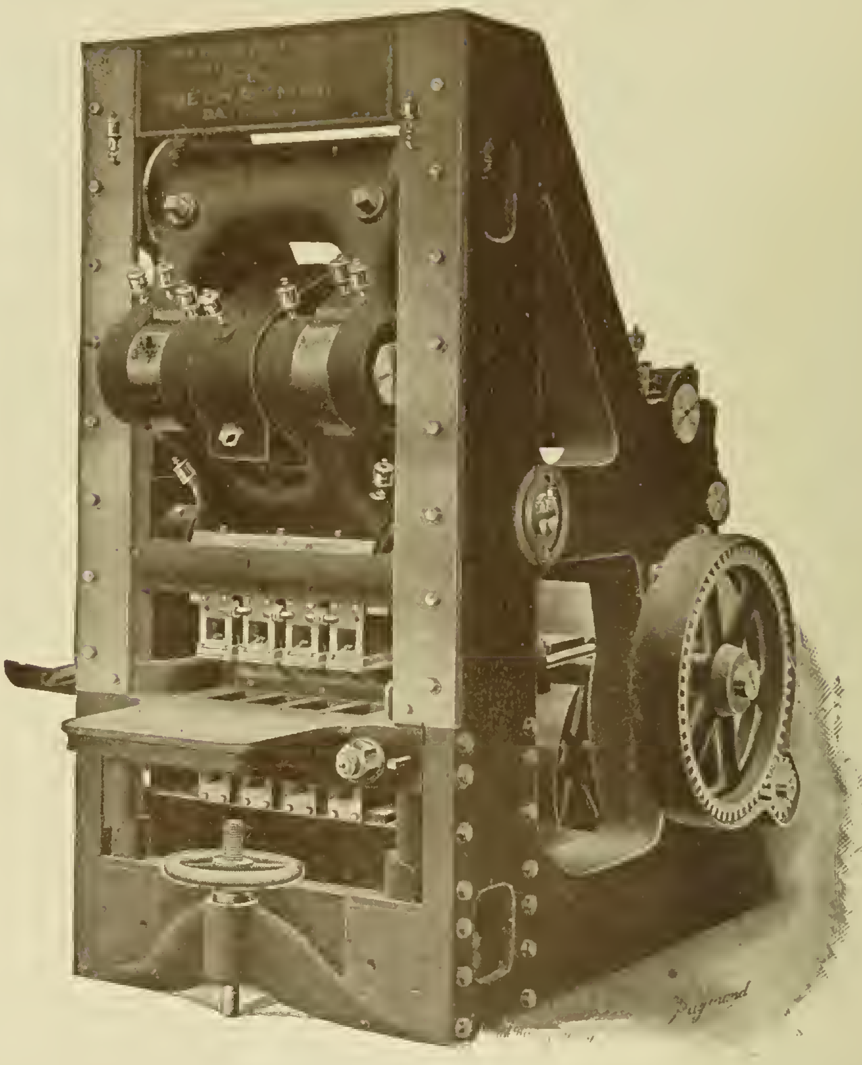
Simplicity, Strength and Mechanical Perfection

Guaranteed to

Turn out the Most Perfect Brick,
— and better —

It Keeps At It

For full particulars—Write Today



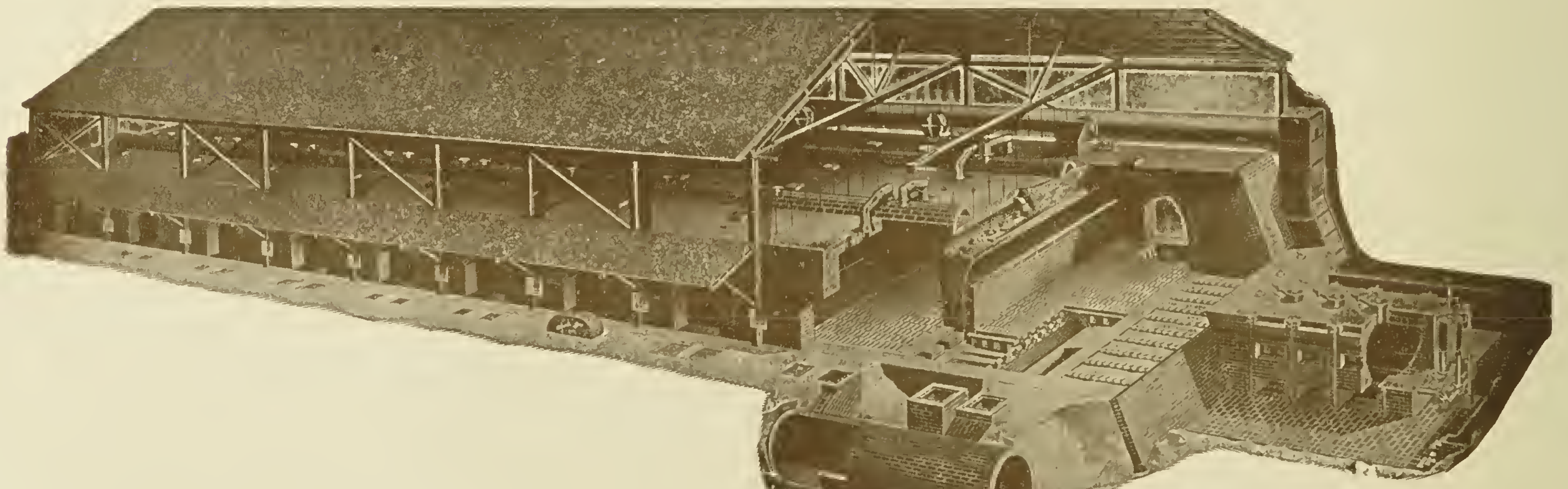
IT'S A WISE DOLLAR that finds repose in this

The Raymond Continuous Kiln —Producer Gas Fired.

A Farseeing, Solid Investment

that is looking after your future, and coining dividends while the other fellow is making up his mind. Delay seldom gets anybody anything—The Biggest Trait of the Biggest Men of today is that of **Initiative** following **Conviction**

Give us a chance and we'll convince you. Start right by dropping us a line today.



THE C. W. RAYMOND COMPANY

The Strongest Power in the World of Clayworking Machinery

Dayton Ohio U. S. A.

The Claycrafter Supplement

BRICK MACHINERY

Wonderful Progress

A short generation ago machine brick making was in its infancy, the few machines in use so crude as to mark but a slight advance over the prevailing hand and horse power methods of the times.

The invention of the auger brick machine, however, after all doubts and misgivings had been dispelled, began to lend a tremendous impetus to clay manufacture.

Once installed into popular favor there seemed for a while to be no limit to the ever increasing demand for heavier and larger capacity machines, which found machinery builders rivalling each other in the production of these colossal types.

Up to this point little attention had been bestowed on the mechanical features of his plant by the average clay man, putting up the best he could with annoying stoppages and breakdowns, giving no special study to machinery operation—it failed to interest him.

About this time something happened that began to turn his mind towards mechanical subjects. The automobile began its great campaign of education. First it was gasoline versus steam. The millions spent in the popular press for the enlightenment of the general public began to attract his attention. Buy an auto he must, if not now, as soon as he could afford it. What better, then, than begin to post himself on the mechanical features of the various types bidding for his favor.

In pursuing this investigation what more natural then, than that he should look a little closer into the operation of his own machinery. Engine, shaftings, gearings, clutches, transmission, rolling stock, everything had a new interest to him now—there's no mistake about this, gentlemen, the country is machinery interested, and we can certainly thank the automobile industry largely for it.

This interest is taking form in every branch of mechanics in this country. Interest of an active kind that is demanding better types of machines from the manufacturers. Not the type that "looks" and "listens" good, but the one that "makes good," and for which the interested and experienced buyer is willing to pay the price. This has placed the progressive machinery builder decidedly on his mettle to produce not larger and heavier types, but rather to perfect those sizes previously attained; improvement in shaftings, and gearings and bearings, methods of lubrication, and general rigidity and strength reinforcement; this with the idea paramount of minimization of power and stoppage and repairs.

This company has caught the inspiration of the times, and our greatest concern is to make "good machinery, better." Our products whether in machinery, dryers, kilns, will be found to be leaders of their class.

And if painstaking attention to detail and an inborn desire to please prevails, we propose to keep them there. *The C. W. Raymond Co., Dayton, Ohio, U. S. A.*

DISCOVERED

THE MISSING LINK

THE RAYMOND
PATENTED

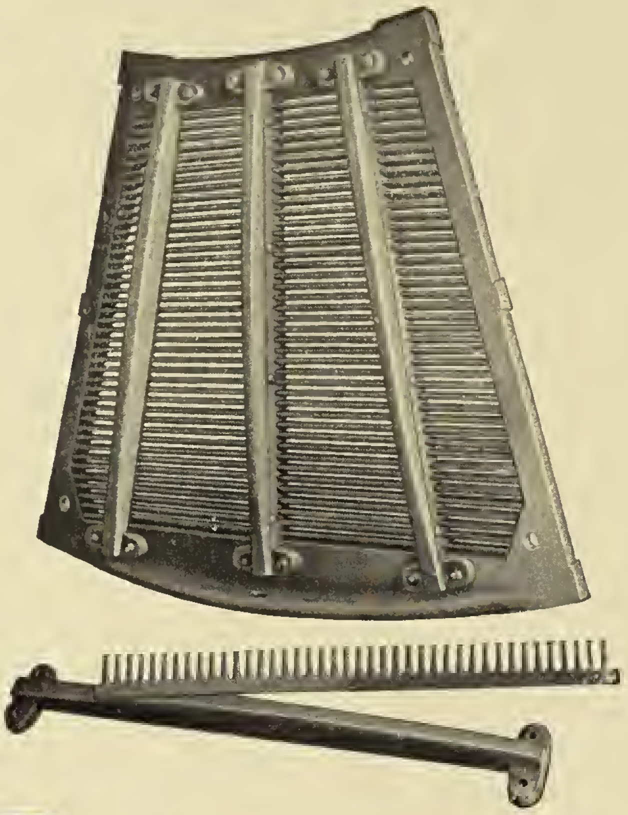
STEEL BAR DRY PAN SCREEN PLATE

For Many Years

it has been universally acknowledged that the limited screening capacity of Dry Pans formed the greatest retarding influence in grinding operations. Many attempts to remedy the difficulty have ended in poor success.

It remained for our engineering department to hit upon the happy solution.

60% MORE ACTUAL OPENING



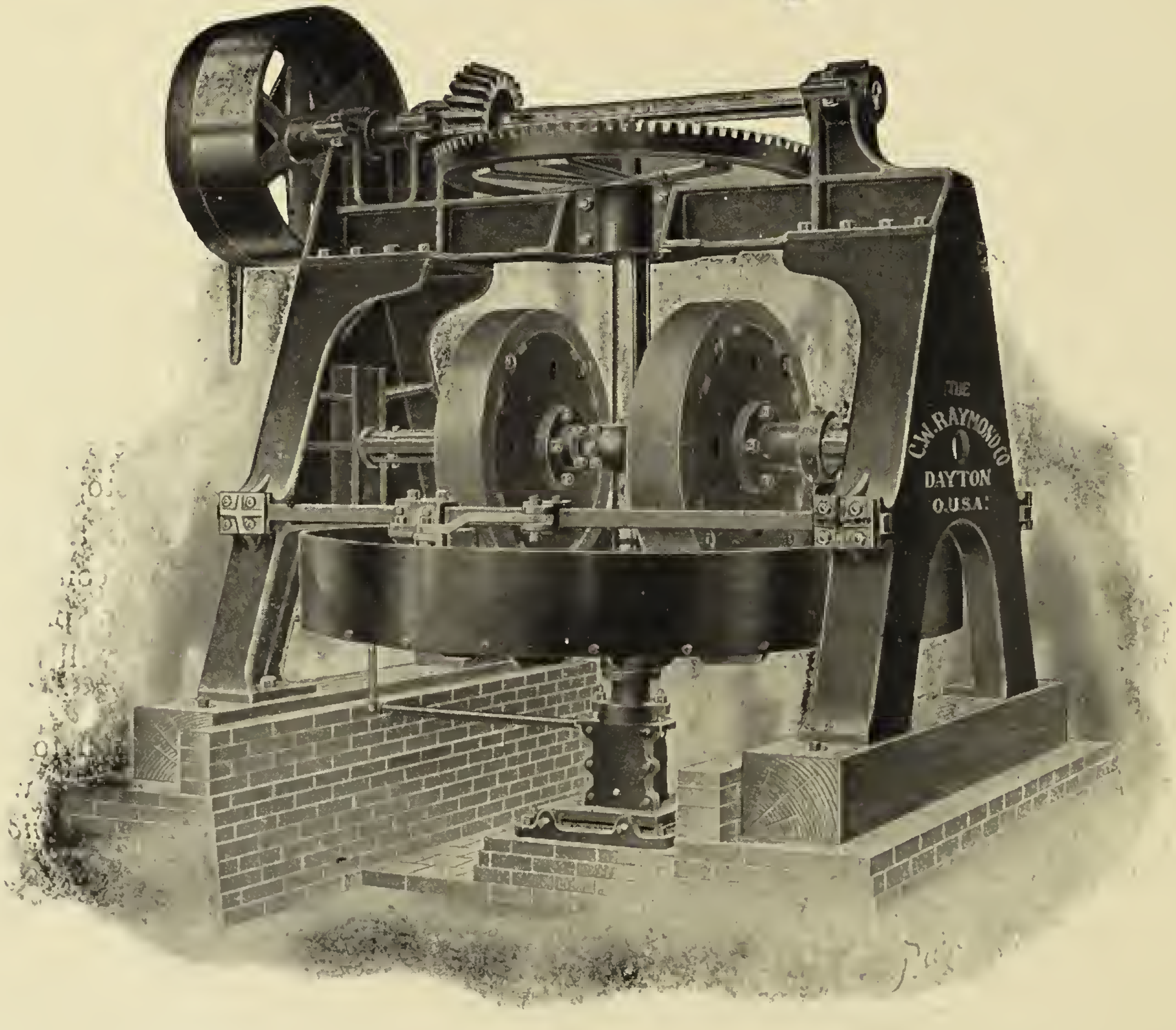
Our Heavy Duty Pans

Fitted with this screen will easily grind and screen—to any desired fineness—50% more material than any other Dry Pan in the World, and with less power.

We furnish these screens for any make or size of pan.

For Information, Pan or Screen. Write today to

THE C. W. RAYMOND CO.
Dayton Ohio U.S.A.


THE
C.W. RAYMOND CO.
DAYTON
O.U.S.A.

RODGERS

RODGERS FOR DRYERS

That our efforts have been appreciated by the Clay Workers of the country is proven by the fact that we are now the ***Leaders*** in America in the Designing of Complete Plants and the installing of Waste Heat Dryers.

Canton, Ohio, Oct. 17, 1912.

L. E. Rodgers Engineering Company, Chicago, Ill.

Gentlemen: During the past five years we have installed your waste heat dryers at our Cleveland Plant, Minerva (Ohio) Plant, Moberly, (Mo.) Plant and our four larger plants here in the city, and we believe we have at our various yards the most complete, economical and successful dryers in the United States.

The fact that we continue to consult with you on all our dryer problems shows that we appreciate your careful attention to details, and your businesslike methods in carrying out your work and it is a pleasure for us to recommend you to the brickmakers of the country.

To dry our output of over 500,000 paving brick a day requires dryers that are dependable and that give results and we have found out from experience that yours do.

Wishing you every success, we remain

Yours very truly,
THE METROPOLITAN PAVING BRICK CO.,
By H. S. Renkert, (Signed)
Treas. & Gen'l. Mgr.

L. E. RODGERS ENGINEERING CO.

Waste Heat Dryer Specialists

Brick Works Engineers

Largest Manufacturers of Brick Drying Equipment in the United States

30 North La Salle Street .:. .:. CHICAGO

RODGERS

RODGERS FOR DRYERS

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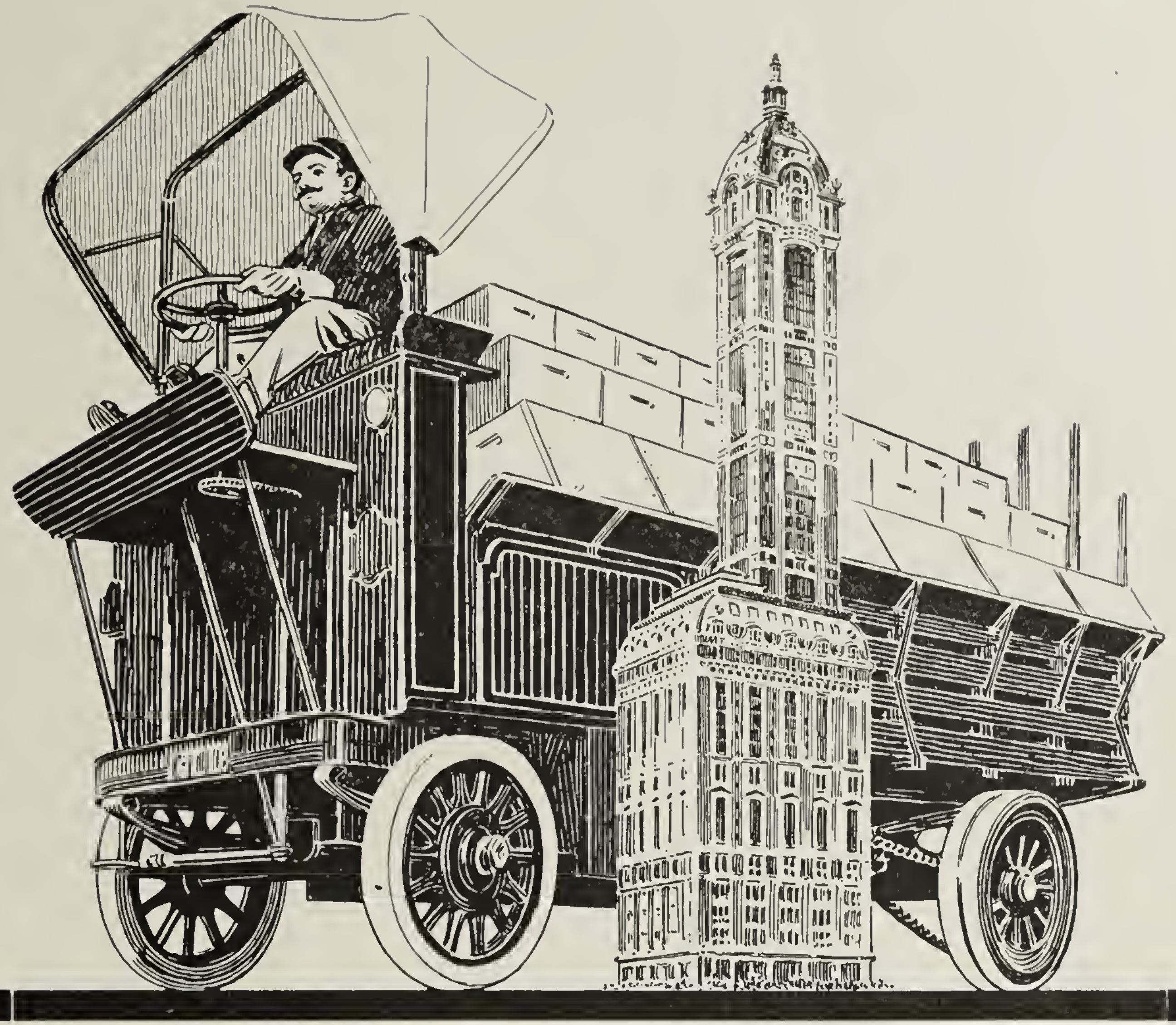
WHO'S WHO IN THE CLAY WORKING FIELD?

Read the Answer in the Names Above



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N. Y. State University.
Raymond Co., C. W.
Richardson-Lovejoy Eng. Co.

Aerial Tramways.

Broderick & Bascom Rope Co.

Automatic Cutters.

(See Cutters.)

Barrows and Trucks.

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Berg Machy. Mfg. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machy. Co.
Electric Locomotive & Car Co.
Fate Co., The J. D.
Freese & Co., E. M.
Illinois Sup. & Cons. Co.
Manufacturers Eq. Co.
Martin Bk. Mach. Mfg. Co., H.
Ohio Ceramic Eng. Co.
Potts & Co., C. & A.
Raymond Co., The C. W.
Steele & Sons, J. C.
Stevenson Co., The
Taplin, Rice-Clerkin Co.
Wallace Mfg. Co.
Wellington Machine Co.

Barytes, Carbonate of.

Gabriel & Schall.
Roessler Hasslacher Chem. Co.

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Chicago Rubber Co.
Gandy Belting Co.
Imperial Belting Co.
Manufacturers Eq. Co.
Raymond Co., C. W.
R & S Belting Co.
Sawyer Belting Co.

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Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Ceramic Sup. & Cons. Co.
Chambers Bros. Co.
Chicago Rubber Co.
Fate Co., J. D.
Freese & Co., E. M.
Gandy Belting Co.
Imperial Belting Co.
Raymond Co., C. W.
R & S Belting Co.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.

Belt Dressing.

Cling-Surface Co.

Blocks.

Broderick & Bascom Rope Co.

Blowers.

American Blower Co.
American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Raymond Co., C. W.
Rodgers Eng. Co., L. E.
Sirocco Eng. Co.
Trautwein Dryer & Eng. Co.

Boilers.

(See Engines and Boilers.)

Brick-Handling Machinery.

Mathews Gravity Carrier Co.

Brick Machinery.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machy. Co.
Chisholm, Boyd & White Co.
Eastern Machy. Co.
Fate Co., The, J. D.
Fernholtz Brick Machy. Co.
Freese & Co., E. M.
Illinois Supply & Con. Co.
Jackson & Church Co.
Martin Brick Mach. Mfg. Co.
Ohio Ceramic Engineering Co.
Potts & Co., C. & A.
Raymond Co., C. W.
Steele & Sons, J. C.
Stevenson Co.
Taplin, Rice-Clerkin Co.
Turner, Vaughn & Taylor Co.
Wallace Mfg. Co.
Wellington Machine Co.

Brick Machines (Dry Press).

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Chicago Brick Machy. Co.
Chisholm, Boyd & White Co.
Illinois Supply & Con. Co.
Raymond Co., C. W.

Brick Machines (Soft Mud).

American Clay Machy. Co.
Eastern Brick Machy. Co.
Martin Bk. Mc. Mfg. Co., H.
Potts & Co., C. & A.
Raymond Co., C. W.
Wallace Mfg. Co.
Wellington Machine Co.

Brick Machines (Stiff Mud).

American Clay Machy. Co.
Bonnot Co., The
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
Raymond Co., C. W.
Steele & Sons, J. C.
Stevenson Co., The.
Taplin Rice-Clerkin Co.
Wallace Mfg. Co.
Wellington Machine Co.

Brick Recutter.

Raymond Co., C. W.

Brick (Building).

Fiske & Co.
Marion Brick Works.
Purington Paving Brick Co.

Brick (Fire).

Chicago Retort & Fire Bk. Co.
Dover Fire Brick Co.
Evens & Howard Fire Bk. Co.
Federal Clay Pro. Co.
Maurer & Son.
St. Louis Vit. & Fire Bk. Co.

Brick or Block (Paving).

Barr Clay Co.
Danville Brick Co.
Deckman Duty B. Co.
Dunn Wire-Cut-Lug Bk. Co.
Marion Brick Works.
Metropolitan Paving Bk. Co.
Murphysboro Paving Bk. Co.
Patterson Clay Pro. Co.
Purington Paving Bk. Co.
Sterling Bk. Co.

Cables and Cableways.

Broderick & Bascom Rope Co.

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American Clay Machy. Co.
Atlas Car & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Chase Fdy. & Mfg. Co.
Electric Locomotive & Car Co.
Fate Co., J. D.
Martin Brick Mach. Mfg. Co.
Ohio Ceramic Engineering Co.
Raymond Co., C. W.
Weller Mfg. Co.
Wellington Machine Co.

Cars (Clay).

Arbuckle & Co.
Atlas Car & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Chambers Bros. Co.
Chase Fdry. & Mfg. Co.
Electric Locomotive & Car Co.
Fate Co., J. D.
Ohio Ceramic Eng. Co.
Schultz & Son, A. L.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.
Wellington Machine Co.

Cars (Dryer).

Atlas Car & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Chase Fdry. & Mfg. Co.
Electric Locomotive & Car Co.
Ohio Ceramic Eng. Co.

Cars (Electric).

Atlas Car & Mfg. Co.

Castings.

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Berg Machy. Mfg. Co., Ltd.
Canton Fdry. & M. Co.
Chambers Bros. Co.
Nortmann-Duffke Fdry Co.
Taplin, Rice-Clerkin Co.

Clays.

Cedar Crest Clay Co.

Clay Feeders and Mixers.

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Brewer & Co., H.
Ceramic Supply & Cons. Co.
Chambers Bros. Co.
Fate Co., The J. D.
Freese & Co., E. M.
Illinois Sup. & Cons. Co.
Marion Mach. Fdy. & Sup. Co.
Raymond Co., C. W.
Stevenson Co., The.
Taplin, Rice-Clerkin Co.

Clay Handling Machinery.

Brewer & Co., H.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.

Clay Technologist.

Berg Machy. Mfg. Co., Ltd.
Hunt & Co., Robt. W.
Richardson-Lovejoy Eng. Co.

Clutches (Friction).

Brewer & Co., H.
Chambers Bros. Co.
Schultz & Son, A. L.
Weller Mfg. Co.

Coloring.

Ricketson Mineral Paint Wks.
Williams & Co., C. K.

Contracting Engineers and Machinists.

Berg Machy. Mfg. Co., Ltd.
Ceramic Supply & Con. Co.
Chambers Bros. Co.

Conveying Machinery.

(See Elevators and Conveyors.)

Cordage.

Broderick & Bascom Rope Co.

Crushers.

American Clay Machy. Co.
American Road Machine Co.
Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate Co., J. D.
Freese & Co., E. M.
Illinois Sup. & Cons. Co.
Martin Brick Mach. Mfg. Co.
Potts & Co., C. & A.
Phillips & McLaren.
Raymond Co., C. W.
Wallace Mfg. Co.
Wellington Machine Co.
Williams Patent C. & Pul. Co.

Cutters, Automatic Rotary.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate Co., J. D.
Freese & Co., E. M.
Marion M. Fdry. & Sup. Co.
Martin Brick Mach. Mfg. Co.
Raymond Co., C. W.
Steele & Sons, J. C.
Wallace Mfg. Co.

Cutting Wires.

Arbuckle & Co.
Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Ceramic Supply & Cons. Co.
Chambers Bros. Co.
Fate Co., J. D.
Raymond Co., C. W.

Dies.

Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Canton Fdry. & M. Co.
Chambers Bros. Co.
Fate Co., The J. D.
Ohio Ceramic Eng. Co.
Stevenson Co.
Taplin, Rice-Clerkin Co.
Raymond Co., C. W.

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Taplin, Rice-Clerkin Co.
Turner, Vaughn & Taylor Co.

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American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate Co., J. D.
Marion M. Fdry. & Supply Co.
Martin Brick Mach. Mfg. Co.
Potts & Co., C. & A.
Raymond Co., C. W.
Williams Patent C. & Pulv. Co.

Dryer Cars.

(See Cars)

Dryers.

American Blower Co.
American Clay Machy. Co.
Bartlett & Snow Co., C. O.
Berg Machy. Mfg. Co., Ltd.
Chambers Bros. Co.
Green Fuel Economizer Co.
Martin Brick Mach. Mfg. Co.
National Dry Kiln Co.
Ohio Ceramic Eng. Co.
Potts & Co., C. & A.
Raymond Co., C. W.
Richardson-Lovejoy Eng. Co.
Rodgers Eng. Co., L. E.
Scott Kiln Drying Co.
Standard Dry Kiln Co.
Steele & Sons, J. C.
Trautwein Dryer & Eng. Co.

Dry Pans.

American Clay Mach. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machy. Co.
Chisholm, Boyd & White Co.
Eagle Iron Works.
Fate Co., J. D.
Martin Brick Mach. Mfg. Co.
Phillips & McLaren.
Raymond Co., C. W.
Stevenson Co.
Taplin, Rice-Clerkin Co.
Turner, Vaughn & Taylor Co.

Dynamos and Generators.

General Electric Co.
Westinghouse Co.

Electric Shovels.

Bucyrus Co.
Thew Automatic Shovel Co.

Electrical Instruments.

Brown Instrument Co.

Elevator Buckets.

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Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Ceramic Supply & Cons. Co.
Raymond Co., C. W.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.

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Berg Machy. Mfg. Co., Ltd.

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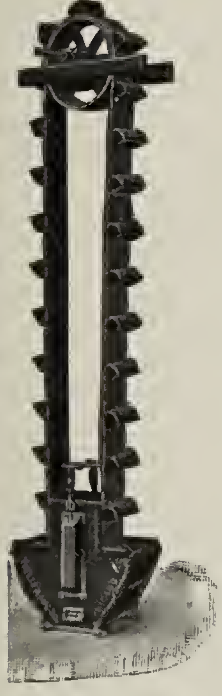
Minimize your handling costs—effect a big economy in time and labor—by using Weller Elevating and Conveying Machinery



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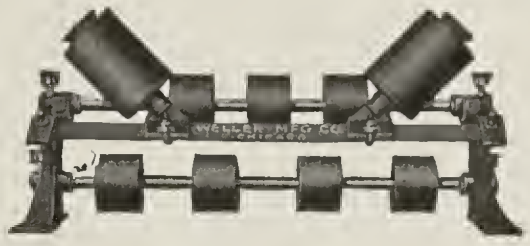
Get information on Weller Belt, Spiral, Apron and Bucket Conveyors, Chain Elevators, Portable Elevators, etc. No obligation if we estimate on your requirements.



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Friction Clutch Pulleys

Economical Power Transmission

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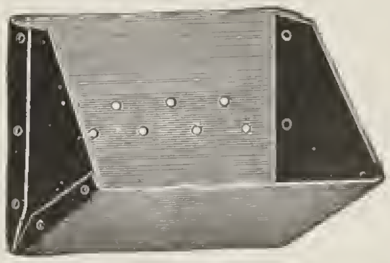

Elevator Buckets

Weller Mfg. Co. : Chicago

Bonnot Co., The.
Gandy Belting Co.
Illinois Sup. & Cons. Co.
Mathews Gravity Carrier Co.
Potts & Co., C. & A.
Raymond Co., C. W.
R & S Consumers Belting Co.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.

Engineers.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Ceramic Supply & Cons. Co.
Raymond Co., C. W.
Richardson-Lovejoy Eng. Co.
Rodgers Eng. Co., L. E.
Taplin, Rice-Clerkin Co.
Trautwein Dryer & Eng. Co.

Engines and Boilers.

American Blower Co.
Berg Machy. Mfg. Co., Ltd.
Green Fuel Economizer Co.
Murray Iron Wks. Co.
Raymond Co., C. W.
Rodgers Eng. Co., L. E.

Engineers and Builders (Sewer Pipe Factories, Drain Tile).

American Clay Machy. Co.
Brewer & Co., H.
Broderick & Bascom Rope Co.
Ceramic Supply & Cons. Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
Raymond Co., The C. W.
Richardson-Lovejoy Eng. Co.
Rodgers Eng. Co., L. E.
Taplin, Rice-Clerkin Co.
Turner, Vaughn & Taylor Co.

Fans.

American Clay Machy. Co.
American Blower Co.
Berg Machy. Mfg. Co., Ltd.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Murray Iron Works Co.
Raymond Co., C. W.
Rodgers Eng. Co., L. E.
Sirocco Eng. Co.
Trautwein Dryer & Eng. Co.

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Green Fuel Economizer Co.
Murray Iron Wks. Co.
Raymond Co., C. W.
Stewart Heater Co.

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American Clay Machy. Co.
Baird Machine & Mfg. Co.
Raymond Co., The C. W.
Stevenson Co., The.
Taplin, Rice-Clerkin Co.

Fire Brick Coating.

Johns-Manville Co., H. W.

Fire Extinguishers.

Childs & Co., O. J.
Johns-Manville Co., H. W.

Flower Pot Machy.

Baird M. & Mfg. Co.
Taplin, Rice-Clerkin Co.

Flue Blowers.

Marion Mach. Fy. & Sup. Co.

Forgings.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.

Fuel Economizers.

Green Fuel Economizer Co.

Furnace (Kiln).

Gas Machy. Co.
Richardson-Lovejoy Eng. Co.

Gears.

Baird Machine & Mfg. Co.
Nuttall Co., R. D.
Schultz & Son, A. L.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.

Grates and Grate Bars.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Chicago Brick Machy. Co.
Electric Locomotive & Car Co.
Murray Iron Wks. Co.
Raymond Co., C. W.

Grey Iron.

Canton Fdry. & M. Co.

Hoists.

American Clay Machy. Co.
Fate Co., J. D.
Electric Locomotive & Car Co.
Weller Mfg. Co.

Hollow Block Machinery.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Fate Co., J. D.
Raymond Co., C. W.
Taplin, Rice-Clerkin Co.

Inspection Tests—Consultation.

Hunt & Co., Robert W.
Richardson-Lovejoy Eng. Co.

Interlocking Tile.

Denison Tile Eng. Co.

Kilns.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Boss Co., John C.
Buhrer, Jacob.
Gas Machy Co.
Klose, K. W.
Raymond Co., C. W.
Richardson-Lovejoy Eng. Co.
Scott Kiln Drying Co.

Kiln Doors and Frames.

Industrial Car Co.

Kiln Lugs and Bands.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Caldwell Co., W. E.
Electric Locomotive & Car Co.
Ohio Cer. Eng. Co.
Raymond Co., The C. W.
Tecktonius Mfg. Co., E. C.

Lime Hydrator.

Weller Mfg. Co.

Locomotives (Electric).

Atlas Car & Mfg. Co.
Electric Locomotive & Car Co.

Locomotive (Steam).

Davenport Locomo. Works.

Lug (Band).

Caldwell Co., W. E.
Ohio Ceramic Eng. Co.
Raymond Co., The C. W.
Tecktonius Mfg. Co., E. C.

Manganese.

Gabriel & Schall.
National Paint & Mang. Co.
Roessler & Hasslacher Chemical Co.

Mechanical Draft.

American Blower Co.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Raymond Co., The C. W.
Rodgers Eng. Co., L. E.
Sirocco Eng. Co.
Trautwein Dryer & Eng. Co.

Mineral Paint.

Ricketson Mineral Paint Wks.
Williams & Co., C. K.

Mortar Colors.

Ricketson Mineral Paint Wks.
Williams & Co., C. K.

Molds.

American Clay Machy. Co.
Baird M. & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Martin Brick Mch. Mfg. Co.
Raymond Co., C. W.
Wellington Machine Co.

Mold Sanders.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Hilton Sanding Machine Co.
Potts & Co., C. & A.
Martin Brick Mach. Mfg. Co.
Raymond Co., C. W.
Wellington Machine Co.

Motors—Electric.

Fairbanks-Morse & Co.
General Electric Co.
Raymond Co., C. W.
Westinghouse El. & Mfg. Co.

Motors (Gasoline Haulage)

Electric Locomotive & Car Co.
Geo. D. Whitcomb Co.

Oil Burners.

Chicago Brick Machy. Co.
Illinois Supply & Cons. Co.
Schurs Oil Burner Co.
Tate, Jones & Co.
Weller Mfg. Co.

Packings.

Johns-Manville Co., H. W.

Paints.

Johns-Manville Co., H. W.
Ricketson Mineral Paint Wks.
Williams & Co., C. K.

Pans—Dry Pans, Wet Pans, Clay or Chaser Mills Combination Tempering Pans.

Brewer & Co., H.
Fate Co., J. D.
Raymond Co., C. W.
Taplin, Rice-Clerkin Co.
Turner, Vaughn & Taylor Co.

Pallets and Trays.

Industrial Car Co.
Ohio Ceramic Eng. Co.
Ohio Galvanizing & Mfg. Co.

Patents.

Peck, Hubert E.

Perforated Sheet Metal.

Hendrick Mfg. Co.
Nortmann-Duffke Fdry. Co.

Pipe Covering.

Johns-Manville Co., H. W.

Portable Track.

Atlas Car & Mfg. Co.
Industrial Car Co.
Ohio Ceramic Eng. Co.
Raymond Co., The C. W.

Potters' Machinery.

American Clay Machy. Co.
Baird Machine & Mfg. Co.
Bonnot Co.
Raymond Co., The C. W.
Taplin, Rice-Clerkin Co.

Power Plant Equipment (Complete).

Murray Iron Wks. Co.
Rodgers Eng. Co., L. E.
Trautwein Dryer & Eng. Co.
Weller Mfg. Co.

Presses—Sewer Pipe and Tile, Nozzle and Sleeve, Tuyere and Shape Brick.

Baird M. & Mfg. Co.
Taplin, Rice-Clerkin Co.
Turner, Vaughn & Taylor Co.

Pug Mills.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate & Co., J. D.
Freese & Co., E. M.
Martin Brick Mach. Mfg. Co.
Raymond Co., C. W.
Schultz & Son, A. L.
Stevenson Co.
Steele & Sons, J. C.
Taplin, Rice-Clerkin Co.
Wallace Mfg. Co.
Wellington Machine Co.

Pulleys—Cast Iron, Clutch and Wood.

(See Supplies.)

Pulverizers.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Chicago Brick Machinery Co.
Fate Co., J. D.
Potts & Co., C. & A.
Raymond Co., C. W.
Taplin, Rice-Clerkin Co.
Williams Patent C. & Pul. Co.

Pumps—Steam.

Manufacturers Eq. Co.
Pulsometer Steam Pump Co.

Pyrometers.

Brown Instrument Co.
Ceramic Supply & Cons. Co.
Englehard, Chas.

Quartz Glass Articles.

Englehard, Chas.

Rails, (Frogs and Switches).

American Clay Machy. Co.
Atlas Car & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Electric Locomotive & Car Co.
Frank, M. K.
Indianapolis S. & Frog Co.
Ohio Ceramic Eng. Co.
Raymond Co., C. W.
Richardson & Co.

Railway Equipment (Industrial).

Atlas Car & Mfg. Co.
Davenport Loco. Works.
Electric Locomotive & Car Co.
Indianapolis S. & Frog Co.
Ohio Ceramic Eng. Co.
Raymond Co., C. W.
Richardson & Co.

Rattler.

Berg Machy. Mfg. Co., Ltd.
Ceramic Supply & Cons. Co.
Hetherington & Berner.

Recording Gages.

Brown Instrument Co.
Ceramic Sup. & Cons. Co.

Represses.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate Co., J. D.
Illinois Supply & Con. Co.
Martin Brick Mach. Mfg. Co.
Ohio Ceramic Engr. Co.
Raymond Co., C. W.
Steele & Son, J. C.

Revolution Indicators.

Brown Instrument Co.
Ceramic Supply & Cons. Co.

Rope Preservative.

Cling-Surface Co.

Roofing Tile Machinery.

American Clay Machy. Co.
Illinois Supply & Con. Co.
Raymond Co., C. W.
Taplin, Rice-Clerkin Co.

Rope (Wire and Manila).

Broderick & Bascom Rope Co.

Sand Lime Brick Machinery.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Ceramic Supply & Cons. Co.
Chicago Brick Machy Co.
Chisholm, Boyd & White Co.
Fernholtz Brick M. Mfg. Co.
Illinois Sup. & Cons. Co.
Jackson & Church Co.
Ohio Ceramic Eng. Co.
Raymond Co., C. W.

Schools.

Rutgers College.

Scrapers, Plows and Clay Gatherers.

Allen Am. Manganese Steel Co., Edgar.
Eagle Iron Works.
Illinois Supply & Cons. Co.
Fernholtz Brick Mach. Co.
Schofield-Burkett Cons. Co.

Screens (Clay and Cement).

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Ceramic Supply & Cons. Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
Hendrick Mfg. Co.
Illinois Sup. & Cons. Co.
Nortmann-Duffke Fdry. Co.
Ohio Ceramic Engineering Co.
Raymond Co., C. W.
Schofield-Burkett Cons. Co.
Stevenson Co.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.

Semi-Steel.

Canton Fdry. & M. Co.

Sewer Pipe Machinery.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Raymond Co., C. W.
Stevenson Co.
Taplin, Rice-Clerkin Co.
Turner, Vaughn & Taylor Co.

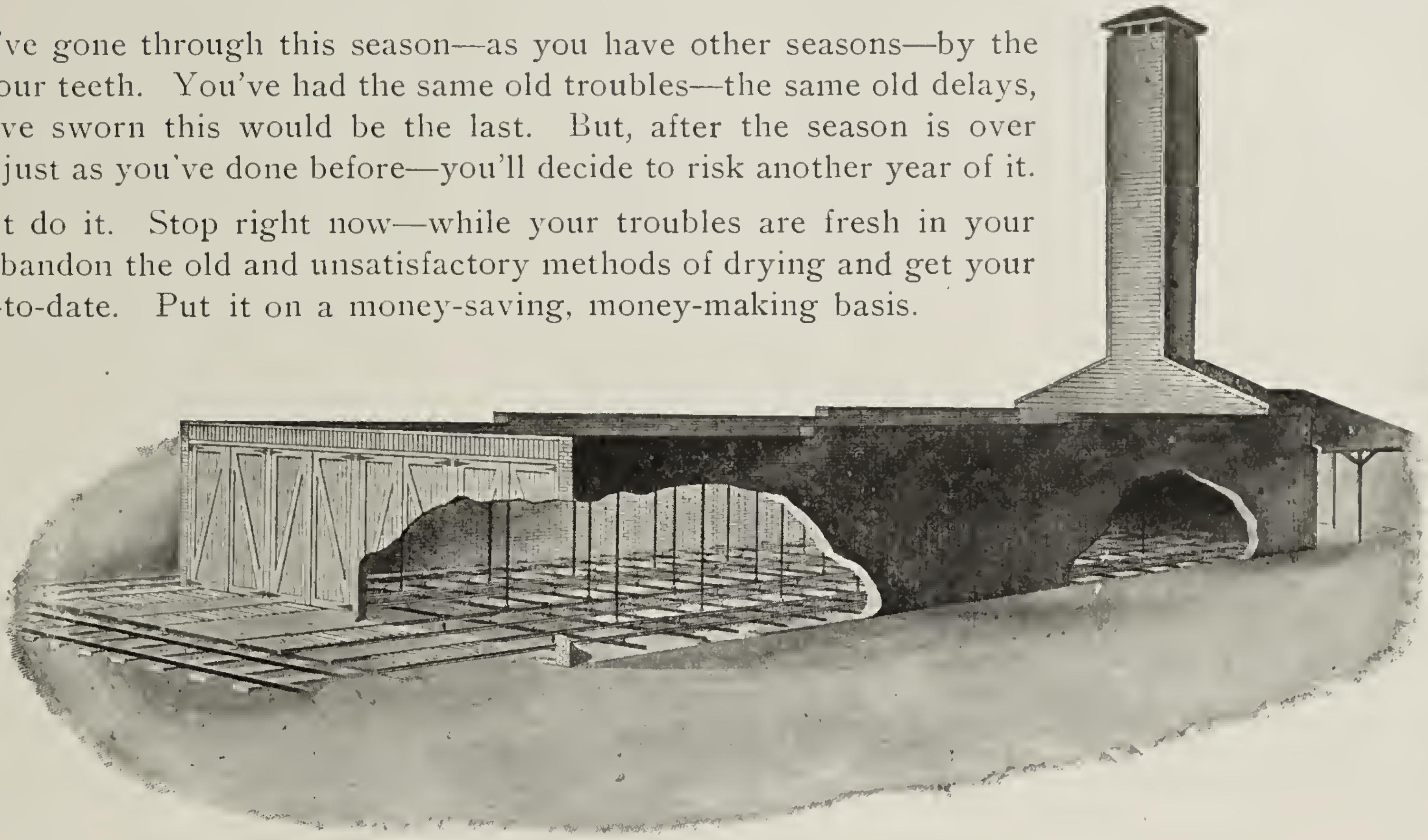
Steam Gages.

Brown Instrument Co.

Make Brick all Winter—Don't be Idle

You've gone through this season—as you have other seasons—by the skin of your teeth. You've had the same old troubles—the same old delays, and you've sworn this would be the last. But, after the season is over you'll do just as you've done before—you'll decide to risk another year of it.

Don't do it. Stop right now—while your troubles are fresh in your mind. Abandon the old and unsatisfactory methods of drying and get your plant up-to-date. Put it on a money-saving, money-making basis.



There is no economy in shutting down your plant in the winter months. Idle machinery is costly machinery. Make brick in the cold months—get a stock ahead for the early spring rush.

By running the year around you are enabled to keep the same help. Steady work makes men experts. Expert men reduce the cost of production. Cheaper production means greater profits.

The profits on your winter-made brick will pay for the installation of the National Exhaust Steam Drier—after that you are ahead—the increased profits are all yours.

Handle Your Product but Once—Install the "National" System

By the National System you load your brick on the cars at the machine—run the cars through the drier and then into the kilns, where they are thrown to the setter direct from the cars.

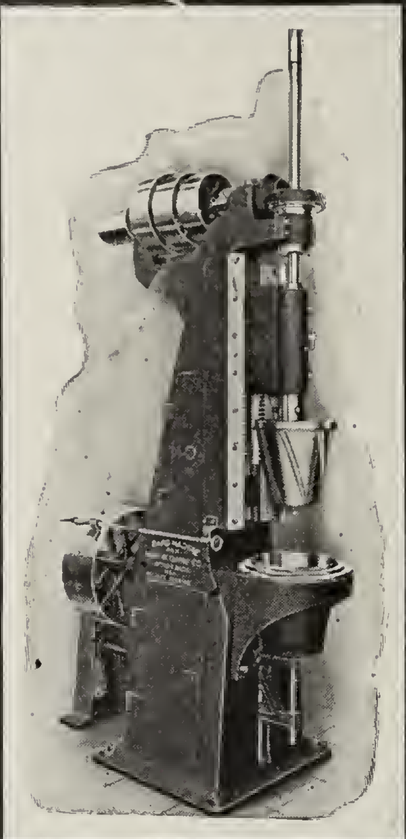
Aren't you at least interested sufficiently to write and ask for full information? It will cost you two cents to get all the facts. Won't you gamble that much with us?

It would pay you in the long run to do it, for it means labor saved, time saved and money saved on the season—three items that mean increased profits.

Our claims are backed up by a guarantee worth one hundred cents on the dollar and payments are made altogether contingent upon the fulfillment of this guarantee.

The National Dry Kiln Company

1118 E. Maryland Street
Indianapolis, Ind.



Baird
AUTOMATIC POTTERY MOLDING MACHINES
1,000 PIECES PER HOUR GUARANTEED ON MEDIUM SIZES
BAIRD MACHINE & MFG. CO.
DETROIT, MICH.

What is efficiency? It is *higher percentage of results.* For example: Laying a brick with five movements instead of eighteen.

If you want the utmost efficiency, the highest percentage of results, in your *drying*—if you want the lowest cost of operation and maintenance—then you want The Standard Natural Draft Steam Drier. It has demonstrated itself to be the most efficient drying system for *all varieties* of clays.

Ask any user. You'll find a long list of them in our interesting catalog—sent to you on request. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Unequaled in Its Utilization of Exhaust Steam

BUYERS' DIRECTORY OF MANUFACTURERS—Continued

Steam Shovels.

Bucyrus Co.
Marion Steam Shovel Co.
Thew Auto Shovel Co.

Steel Pallets.

Ohio Ceramic Eng. Co.
Ohio Galvanizing & Mfg. Co.
Raymond Co., The C. W.

Steel Towers.

Caldwell Co., W. E.

Supplies.

Allen Am. Mang. Steel Co., Edgar.
American Clay Machinery Co.
Atlas Car & Mfg. Co.
Bonnot Co., The
Brewer & Co., H.
Ceramic Supply & Constr. Co.
Chambers Bros. Co.
Chase Fdry. & Mfg. Co.
Chicago Brick Machinery Co.
Chisholm, Boyd & White Co.
Eastern Machinery Co.
Electric Locomotive & Car Co.
Fate Co., The J. D.
Freese & Co., E. M.
Illinois Supply & Constr. Co.
Martin Brick M. Mfg. Co., H.
Ohio Ceramic Engineering Co.
Raymond Co., The C. W.
Steele & Sons, J. C.
Stevenson Co., The
Taplin, Rice-Clerkin Co.
Wallace Mfg. Co.
Weller Mfg. Co.
Wellington Mfg. Co.

Thermometers.

Brown Instrument Co.
Ceramic Supply & Cons. Co.
Rodgers Eng. Co., L. E.

Tile Machinery.

American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Brewer & Co., H.
Chicago Brick Machy. Co.
Fate & Co., J. D.
Freese & Co., E. M.
Illinois Sup. & Cons. Co.
Potts & Co., C. & A.
Raymond Co., The C. W.
Steele, J. C., & Sons.
Taplin, Rice-Clerkin Co.
Wallace Mfg. Co.
Wellington Machine Co.

Tramways (Aerial).

Broderick & Bascom Rope Co.

Transfer Cars.

American Clay Machy. Co.
Atlas Car & Mfg. Co.
Chase Fdry. & Mfg. Co.
Electric Locomotive & Car Co.
Ohio Ceramic Eng. Co.

Trucking Systems.

Chase Fdry. & Mfg. Co.
Electric Locomotive & Car Co.
Fate Co., J. D.
Raymond Co., C. W.
Taplin, Rice-Clerkin Co.

Trucks (Motor).

Electric Vehicle Assoc. of A.

Turntables.

Atlas Car & Mfg. Co.
Canton Fdry. & M. Co.
Electric Locomotive & Car Co.
Ohio Ceramic Eng. Co.

Wagons.

Auburn Wagon Co.

Water Tanks.

Caldwell Co., W. E.

Wheelbarrows.

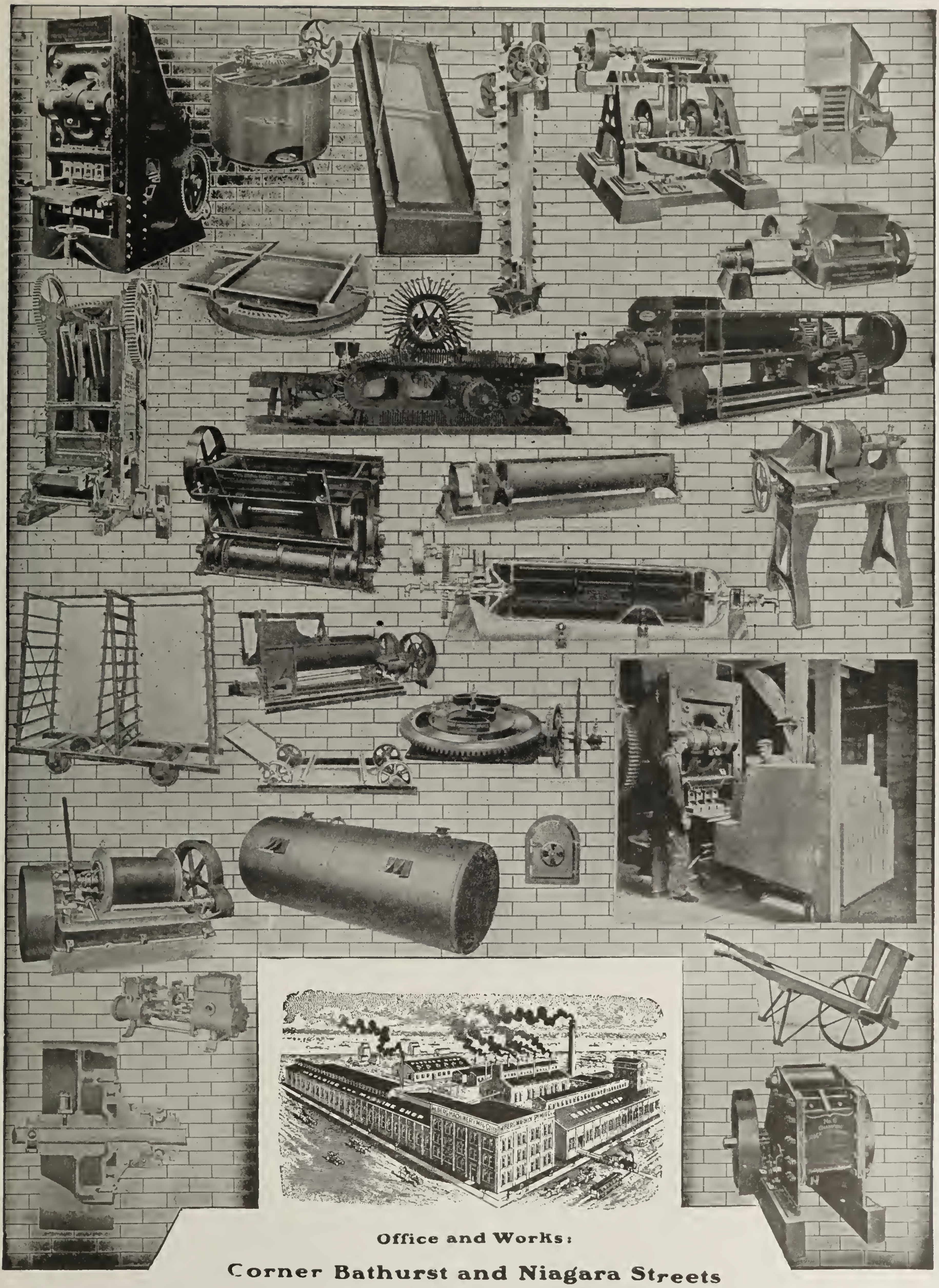
(See Barrows and Trucks).

Winding Drums.

American Clay Machy. Co
Electric Locomotive & Car Co
Fate Co., J. D.
Marion Machine, F. & S. Co.
Weller Mfg. Co.
Wellington Machine Co.

Wire Rope.

Broderick & Bascom Rope Co.
Raymond Co., C. W.



Office and Works:

Corner Bathurst and Niagara Streets

The Berg Machinery Manufacturing Co., Limited

Toronto - Ontario

THE ELWOOD BRICK PRESS
MADE BY
THE CHICAGO BRICK MACHINERY CO.
NO.801. CHICAGO, ILL. PAT PEND.

Elwood

A Press Built for Heavy Duty

When you start out to buy a press your first consideration should be durability. If your press won't stand the strain you are throwing away your money.

Your second consideration should be capacity. If you can't compete with the other fellow in output you might just as well shut up shop.

Your third consideration should be the matter of efficiency. A press that turns out a poor brick brings in poor returns.

The "Elwood" press was designed to meet all these requirements and every other requirement that a first class press should have.

Where the "Elwood" Press Excels

It will put more clay into a brick than any other press.

It is especially adapted to Fire Brick Making and other heavy work on refractory materials.

Ornamental Brick, usually the bane of the brickmaker, also Roman Brick and other unusual sizes, can be made without change of tables or loss of time.

It is a most successful machine for Sand-Lime Brick Making, and is built special for that work.

The changing of Molds is quick and easy. Only half an hour is required to change one mold to an ornamental shape, while all four molds can be changed in less than an hour. As this takes practically a whole day on many other makes of presses, while some cannot be changed on the yard at all, this feature is especially appreciated by the brickmaker.

Dry Press Outfits

We make a specialty of full Dry Press Outfits, and many of the most successful and progressive dry press plants in the country are equipped throughout with our machinery and built after our plans. Outfits are furnished with or without power, and consist of **Press,** proper **Clay Preparing Machinery** adapted to the material, **Bucket Elevator, Screening System,** and the necessary Shafting, Pulleys and Belts, Special Dry Press Trucks and Barrows.

Complete Building Plans and Specifications, from which to erect the plant and arrange the machinery, are furnished to our customers without extra charge.

We are also prepared to contract with any responsible party to **erect the complete plant** from the ground up, install the machinery, and make and burn a kiln of brick before acceptance, guaranteeing the quality and quantity of the brick. To parties who are new in the brick business this plan is especially recommended.

Our equipment catalogue will be mailed to anyone interested.

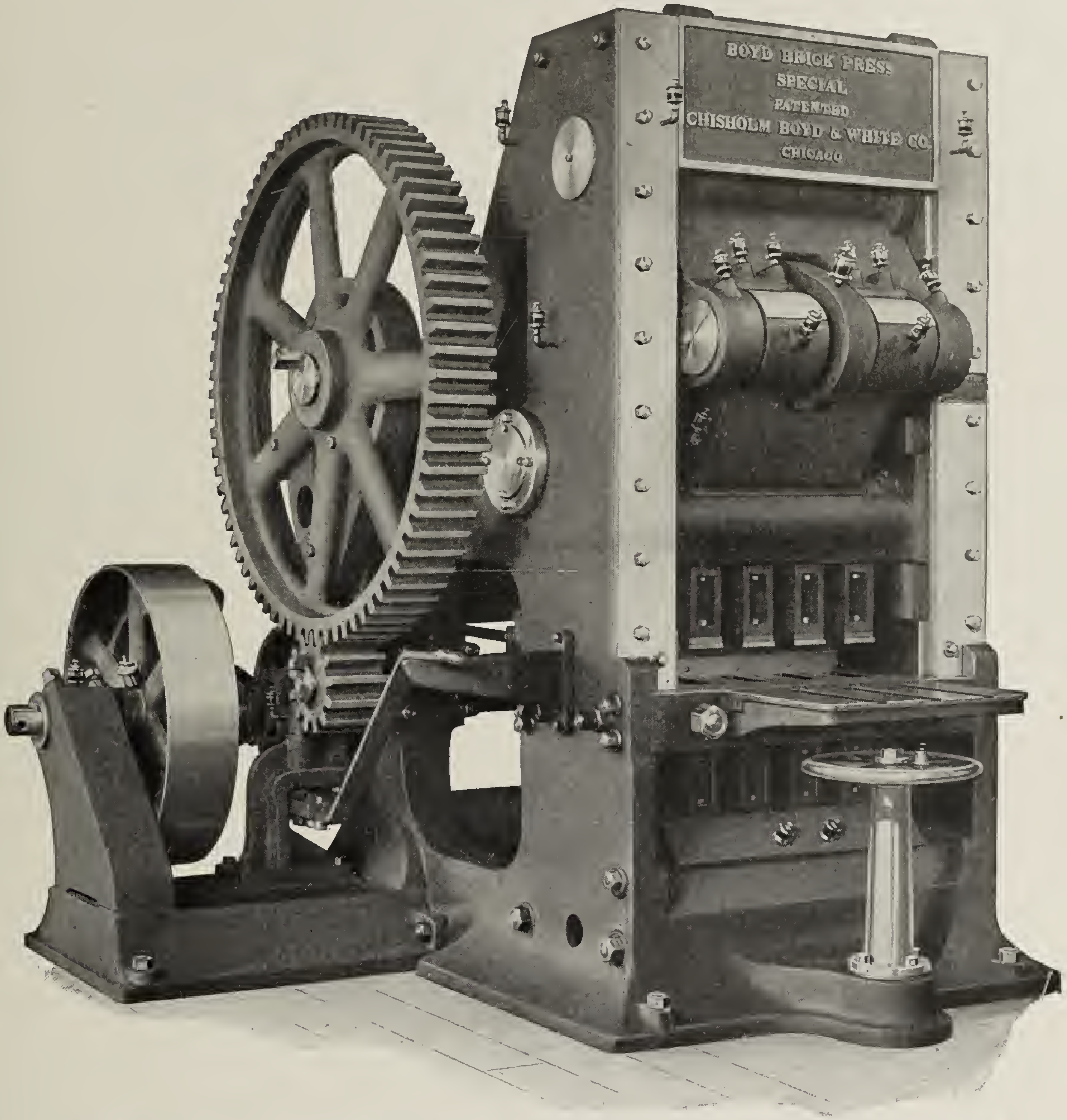
Chicago Brick Machinery Co.

20 W. Jackson Blvd., Chicago

Sold also by the Manufacturers' Equipment Co., Dayton, O.

The Boyd Brick Press

"Built Up to a Standard—Not Down to a Price."



SPECIAL FEATURES OF THE BOYD BRICK PRESS

BALANCED-PRESSURE—brick lifted in molds under pressure
PRESSING TIME FACTOR—long duration, 50% of the cycle.
TOP and BOTTOM of brick equal hardness—NO granulated surfaces.
GEARS, SHAFTS, BEARINGS and other parts exceptionally large—FREE from complicated parts—ACCESSIBILITY unequaled—Strength, Endurance and Efficiency Unsurpassed.

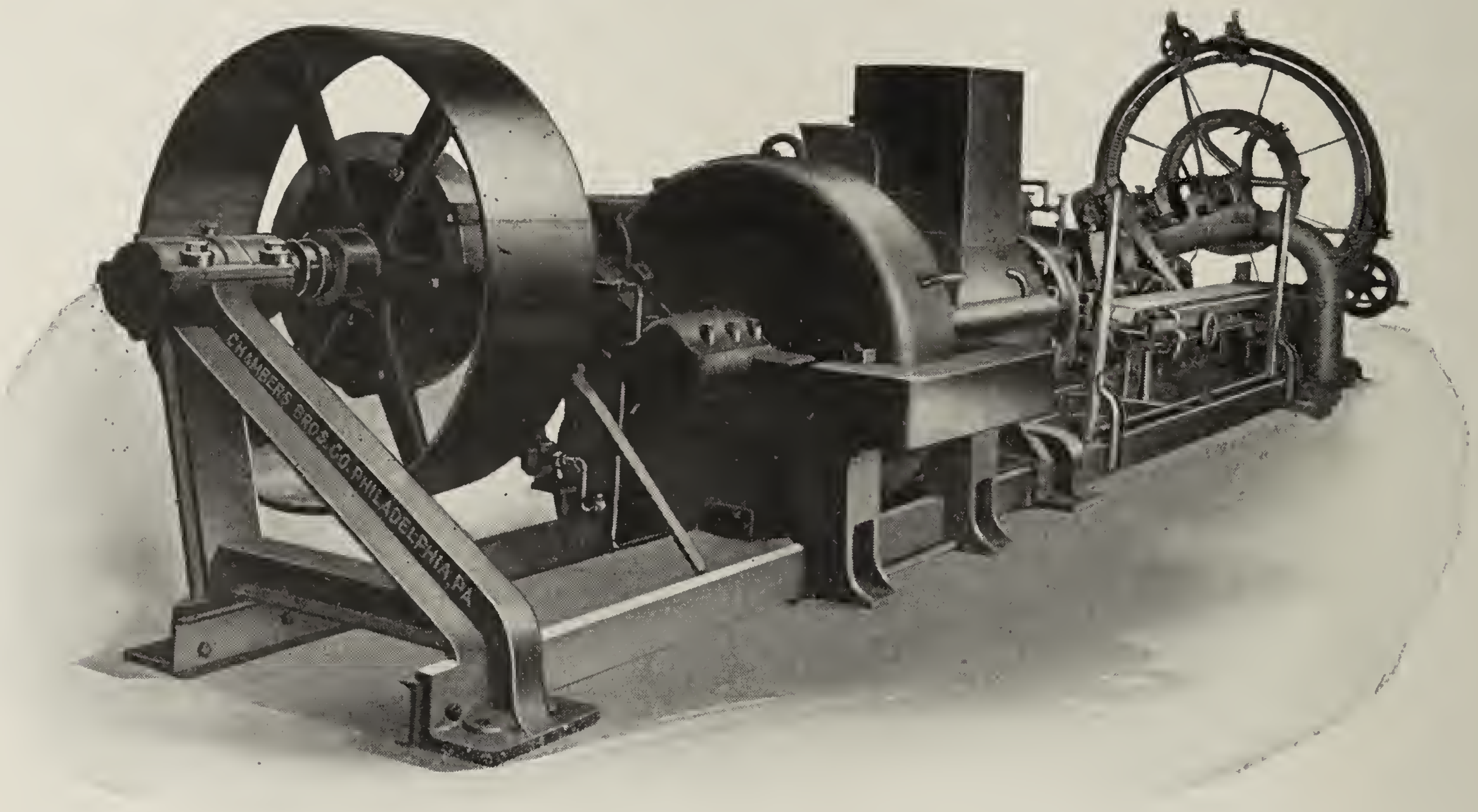
Write for latest Catalogue No. 25, which contains plans and suggestions concerning the design and equipment of brick plants.

Chisholm, Boyd & White Company
Office and Works, 57th and Wallace Sts., CHICAGO, ILL.

Advertisements in "BRICK AND CLAY RECORD" are indexed. Turn to page 4.

THE C LINE

Keystone Auger Brick Machine No. 1



Keystone Auger No. 1 and No. 5 Rotary Cutter
Same Machine Used With Our Other Cutters

The Keystone Auger No. 1 is not a clay temperer but a superior molding and expressing machine designed for manufacturing from prepared clay or shale.

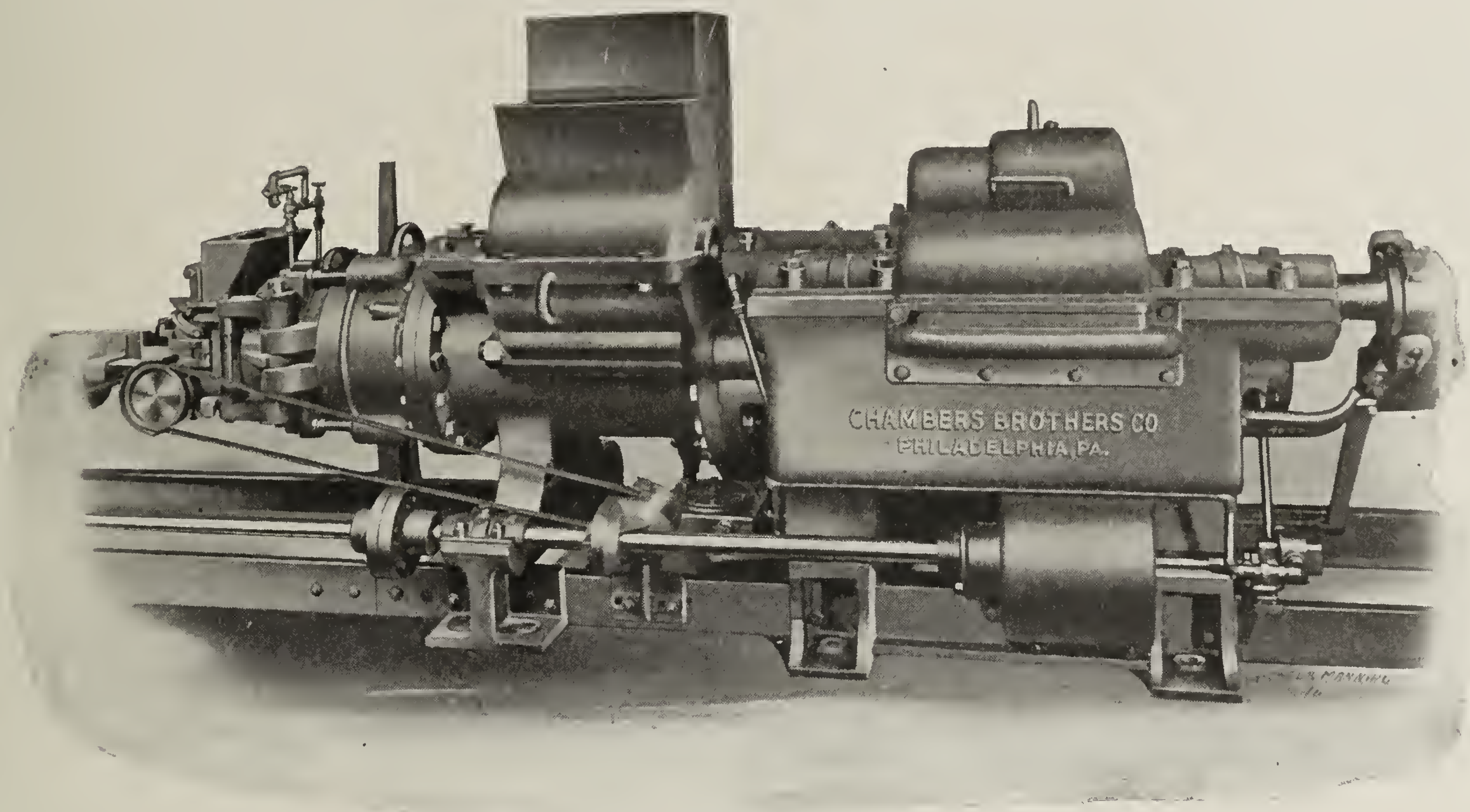
The Standard Chambers Machine, with longer barrel of larger diameter and inserted adjustable tempering knives, is for rough material requiring more tempering than may be given by the previous clay preparing machinery.

Keystone No. 1 has a short, straight barrel, fitted with a heavy forged steel shaft and the continuous propeller system of forwarding mechanism.

The Driving or Transmission Mechanism with its **Frame** are of great strength and have been severely tested. Gears and journals lubricated and protected in a thorough manner.

Augers of different diameters and taper and of varying pitch, some double bitted and others single, to suit the material and the required product may be used within the same case by substituting one sleeve for another. Neither auger shaft nor outer cases are subjected to any wear from the clay, but all exposed parts are of metals the hardest obtainable with the requisite strength.

Running So Quietly as to be almost noiseless, it has one less shaft, two less journals and two less gears than most brick machines, thus saving the owner the maintenance of such parts as well as a certain loss of power through friction. The contention that a single gear brick machine "requires more power" is a fallacy. Gearing does not make power, nor is it "multiplied by gearing" save at the expense of time.



Observe the Thorough Protection of All Gearing

Lubrication.—By a circulating system through ¾ inch wrought pipe connecting with a dirt tight reservoir supplied by a pump which starts operation as soon as the machine is started.

Do not confuse this with a lot of small brass tubes strung across the outside of a gear frame.

Cut Driving Gears of strong pitch and ample face and immersed in an oil bath. Every tooth constantly oiled. The Die Holder, Auger Shaft, End Thrust, Journal Bearings, Gear Frame and Friction Clutch are all interesting features.

Chambers Brothers Company

Philadelphia and Chicago

$2.00 Coal at 67c per Ton

WHERE?

"Lead me to it," we hear you say.

AS A BALD MATTER OF FACT

You'd miss your SUPPER, BED and BREAKFAST for a chance to CLOSE a CONTRACT of THIS CHARACTER.

While your Kiln Firemen are busy, (night and day) shovelling your good $2.00 Coal into your Kilns, only to see two-thirds of it

GOING UP IN SMOKE,

Inconsistent now, isn't it, when you can save Every Penny of that $1.33 per Ton by simply making the proper effort.

It's entirely up to you.

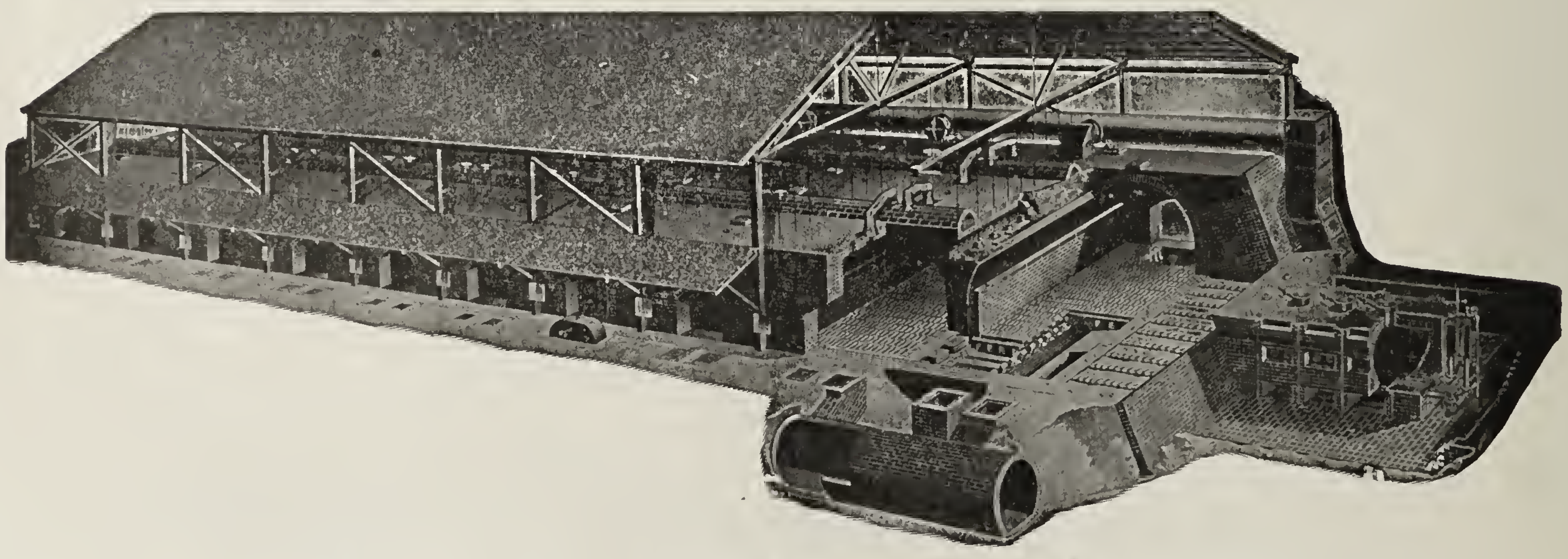
No matter what your product,—High Grade or Low Grade,

REMEMBER

Every Dollar saved is Clear Profit,—nothing to figure against it.

Let us tell you about
The Greatest Clay Works Invention of the Age

The Raymond
PATENTED PRODUCER GAS FIRED
CONTINUOUS KILN



THE C. W. RAYMOND COMPANY

The Strongest Power in the World of Clayworking Machinery

Dayton Ohio U. S. A.

Mention "BRICK AND CLAY RECORD" when writing to advertisers.

Williams' Crusher

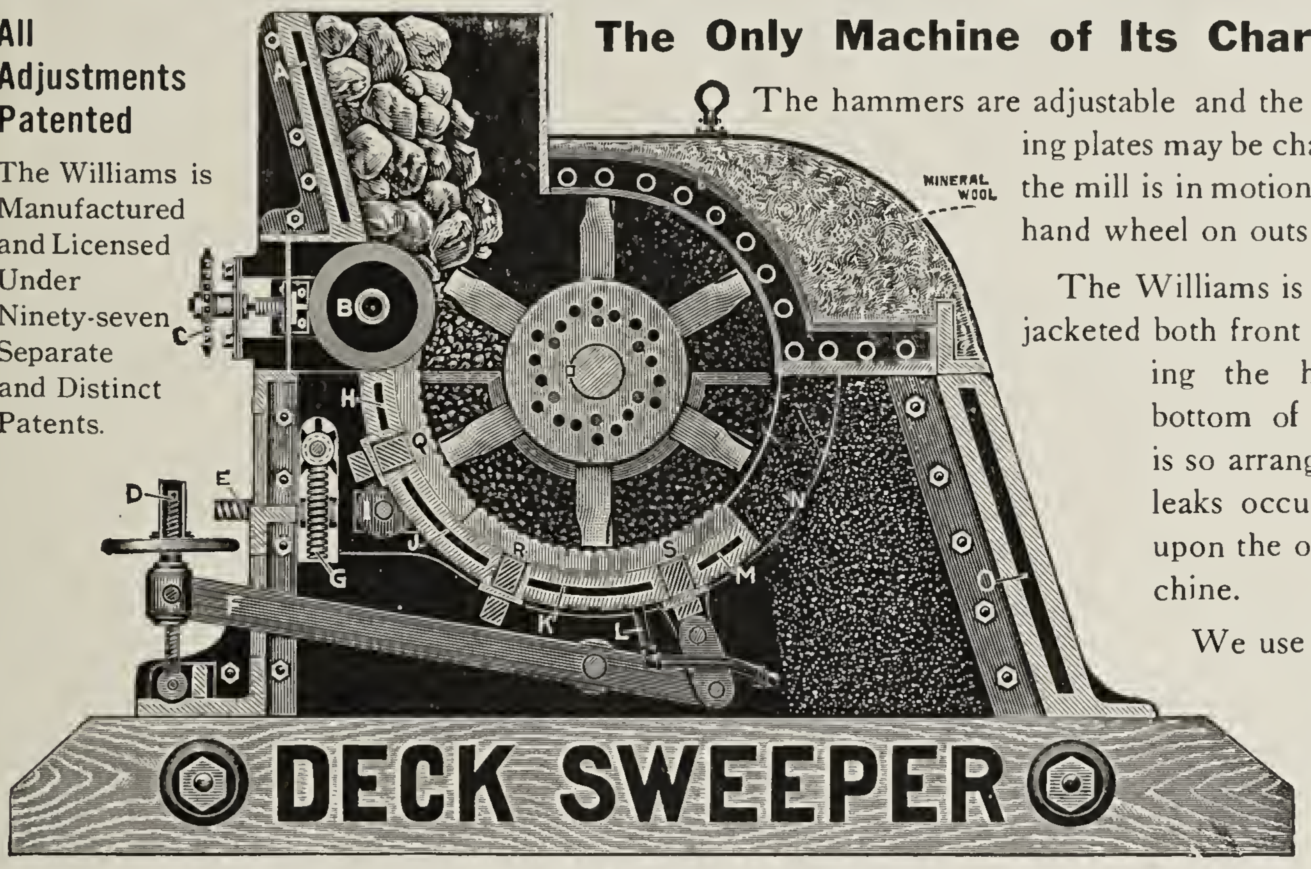
It Grinds Hard Shale

Our claims for the Williams are not just words—they are facts, and hundreds of these machines are in use today and they are accomplishing what we said they would and more.

The Carquinez Brick & Tile Co., of Port Costa, Calif., knows this. They had a shale so difficult to handle that they considered abandoning the plant. We installed a Williams. It not only settled the grinding problem but it reduced the cost of operation. Their case is worth investigating. A full itemized report on the machine that worked such wonders for them is yours for the asking.

All Adjustments Patented

The Williams is Manufactured and Licensed Under Ninety-seven Separate and Distinct Patents.



The Only Machine of Its Character Made

The hammers are adjustable and the position of grinding plates may be changed at will while the mill is in motion. This is done by a hand wheel on outside of machine.

The Williams is thoroughly steam-jacketed both front and back, including the hopper, top and bottom of the machine. It is so arranged that should any leaks occur they are entirely upon the outside of the machine.

We use double extra heavy pipe for heating with return bends upon the outside. We can work any clay that will make brick.

Interior View

A Few Recent Sales

	No.
Rockmart Brick & Slate Co., Atlanta, Ga	4
South River Brick Co., Atlanta, Ga	4
Remillard Brick Co., Oakland, Cal	6
Wm. Kortkamp & Son, Hillsboro, Ill	5
Standard Drain Pipe Co., St. Johns, P. Q	2
Federal Clay Products Co., Mineral City, O	1
John Raukohl, Denver, Colo	2
Troy Fire Proofing Co., Troy, N. Y	3
Manown Mfg. Co., Pittsburg, Pa	2
Adam G. Anders, Cincinnati, O.	2
Boone Brick & Tile Co., Boone, Iowa	5
Mashek Eng. Co., New York City, N. Y	1
Winnebago Drain Tile Co., Winnebago, Minn	5
Ft. Wayne Brick Co., Ft. Wayne, Ind	6
K. & K. Brick Co., Los Angeles, Cal	6
Giese & Diehl, York, Pa	2
Standard Brick Co., Macon, Ga	3
Kreischer Brick Co., Kreischerville, N. Y	1
Carquinez Brick & Tile Co., Port Costa, Cal	8
Krager & Sexton, Melville, Tenn	1
Kier Fire Brick Co., Pittsburg, Pa	3
Fraser-Myers Brick Co., Ginger, Tex	3
Lombard Brick & Tile Co., Lombard, Ill	1
Mertens & Agnew, Washington, D. C	7
Puritan Brick Co., Hamden Jc., O	3
Gehrlich Brick & Tile Co., Wapakoneta, O	3
Herty Cup Co., Daisy, Tenn	1

Williams Patent Crusher & Pulverizer Co.

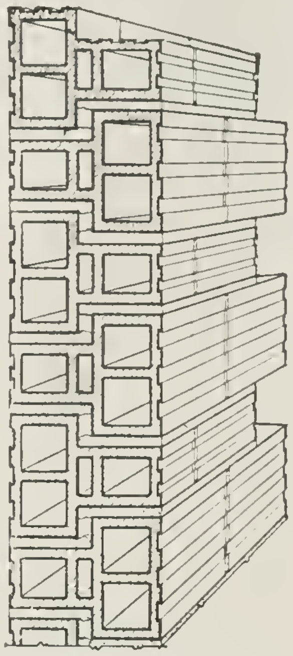
Factory: St. Louis, Mo. 2701 No. Broadway

Old Colony Building, CHICAGO

SAN FRANCISCO OFFICE, 347 Monadnock Bldg.

WRITE FOR NEW CLAY CATALOG No. 18 WITH ALL DETAILS

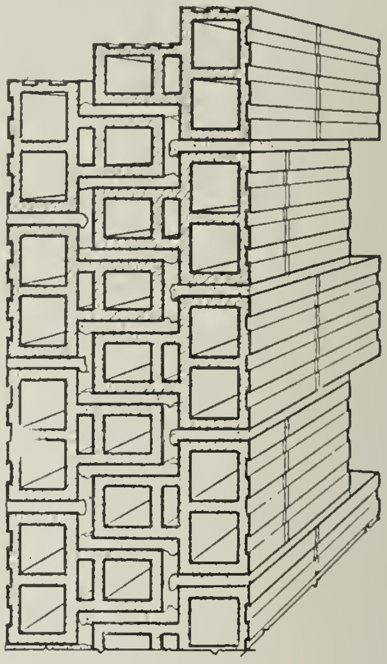
Over 2,100 of the Williams Hinged Hammer Crushers and Pulverizers in daily operation



EIGHT INCH WALL

Are Denison Tile Selling?

(Patented)



TWELVE INCH WALL

LOOK AT THESE FIGURES

Shipments For October Plus
Orders On Books November 1

1,920,575 TILE

Equal to

14,779,785 Common Brick

For rights to manufacture and sell Denison Tile, correspond with The Denison Tile Engineering Co., Schofield Bldg., Cleveland, O. Good territory remains.

Tilemakers may Increase the Sale of their Output by Broadening their Market.

Our Booklet

Hints on Farm Drainage

offers a cheap and effective means of convincing the farmers of your section that tile drainage is not only thoroughly practicable but exceedingly profitable. : : :

In **Hints on Farm Drainage,** its author, Mr. Anton Vogt, gives directions for the proper laying of drain tile, and demonstrates that

- Drainage assists in pulverization
- Drainage prevents surface washing
- Drainage promotes absorption
- Drainage affects the soil temperature
- Drainage lengthens the season
- Drainage makes the land lighter to work
- Drainage adapts the soil to germination
- Drainage improves the quality of crops
- Drainage insures certainty of crops

Hints on Farm Drainage is a 22-page booklet, a sample of which will be sent on request.

PRICE

100 Copies	$ 3 00
200 Copies	5.00
300 Copies	$ 7.00
500 Copies	12.00
1000 Copies	$ 17.00

On single orders of 500 or more the business card of purchaser will be printed on the outside cover without additional charge.

Brick and Clay Record

445 Plymouth Court, Chicago, Ill.

Dunn Wire-Cut-Lug Blocks

They Have Revolutionized the Paving Brick Industry—They Have Standardized Brick Paving

Here Are the "Reasons Why"—Ten of Them:

There is a reason for everything and the Dunn Wire-Cut-Lug Block is no exception. It came into existence to remedy certain defects in paving blocks and it has done it.

Leading paving brick manufacturers all over the country are realizing the revolution the Dunn Wire-Cut-Lug Block is making and one by one they are adopting the idea. The Ten Reasons follow:

1—The Dunn Wire-Cut-Lug Block is not injured by repressing because it does away with the necessity of repressing.
2—It is laid uniformly, each block an equal distance apart, because of the lugs.
3—It admits of a free flow of bonding material because of the uniform distance between each block.
4—It greatly reduces the percentage of culls and seconds.
5—It makes the smoothest pavement possible because of the absolute square corners—the ordinary round edges being unnecessary and a disadvantage in securing a perfect surface.
6—It means increased profits because of increased yardage per thousand brick.
7—It means less trouble in the rigid rattler tests.
8—It means less trouble to sell your product because all the leading cities in the country have accepted the Dunn Wire-Cut-Lug Block on an equal basis with all others in their specifications and many of them have given them preference.
9—It means that your selling department will be aided by a Permanent Publicity Department and a Persistent Educational Campaign during the entire life of our patents—a provision being made for this in the contract we make with you.
10—It means standardization because we license only reputable manufacturers whom we are satisfied are capable of producing No. 1 Paving Block.

We want you to investigate the Dunn Wire-Cut-Lug Block—we want you to go into the matter thoroughly. Let us take you over some of the streets and country roads that have been constructed with this block. Not only see what and how the Wire-Cut Block is accomplishing its work, but hear what the engineers, the municipal authorities and the road commissioners have to say about it.

Then visit the largest paving plants in the world who are now making the Dunn Wire-Cut-Lug Block, and any of the other licensees who early saw the advantage of making it, and get their conclusions.

The Dunn Wire-Cut-Lug Block will stand any test you may require—it has no weak spots—it is the ONE PERFECT block and we are not afraid to submit it to the severest examinations and tests.

We Do Not Manufacture—We Merely License You to Make This Block

THE DUNN WIRE-CUT-LUG BRICK CO.
CONNEAUT, OHIO
PATENTED IN THE UNITED STATES AND FOREIGN COUNTRIES

Dunn Wire-Cut-Lug Blocks

The Paving Brick Plants Now Under License to Manufacture These Blocks Have

An Annual Output of 300,000,000

Think of it—300,000,000 block—enough to pave a 16-foot road more than 700 miles long! That is the annual output of the plants already under license to manufacture the Dunn Wire-Cut-Lug Block. Doesn't that prove to you our proposition is worth at least an investigation?

And, mind you, some of the largest plants in the country are in our lists. Here are the latest additions:

The Peebles Paving Brick Company.............Portsmouth, Ohio.
The Murphysboro Paving Brick Company.........Murphysboro, Ill.
The Binghampton Paving Brick Company.............Bradford, Pa.

Here Are Our Other Licensees:

In addition to the above three recent licensees, we call your attention to the following manufacturers who have adopted the Dunn Wire-Cut-Lug Block—two of the same being the largest plants in the country:

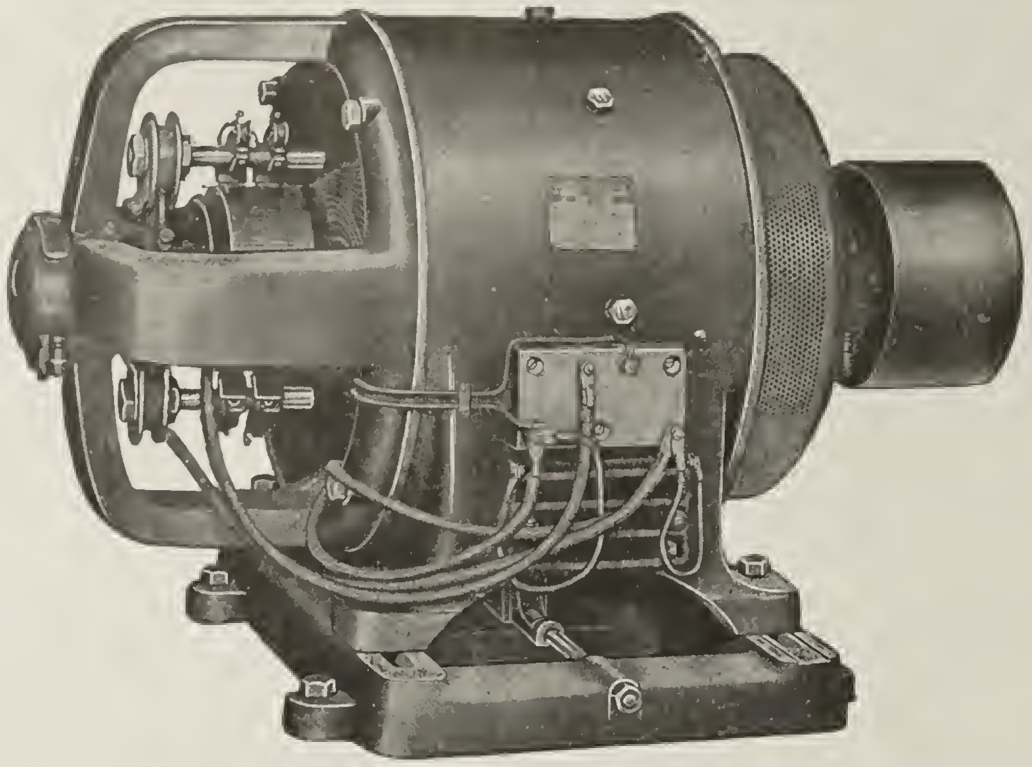
During the year 1910	Corry Brick and Tile Co	Corry, Pa.
	United Brick Co	Conneaut, Ohio
During the year 1911	Sterling Brick Co	Olean, N. Y.
	Reynoldsville Brick & Tile Co	Reynoldsville, Pa.
	Danville Brick Co	Danville, Ill.
	Paterson Clay Products Co	Clearfield, Pa.
During the year 1912	Wabash Clay Co	Veedersburg, Ind.
	Clinton Paving Brick Co	Clinton, Ind.
	Alton Brick Co	Alton, Ill.
	Deckman-Duty Brick Co	Cleveland, Ohio
	Tuna Valley Pressed Brick Co	Bradford, Pa.
	Foster Paving Block Co	Bradford, Pa.
	Metropolitan Paving Brick Co	Canton, Ohio
	Bessemer Limestone Company	Youngstown, Ohio

There is one characteristic about the above licensees—there is not one but what is manufacturing No. 1 Paving Block. Every Dunn Wire-Cut-Lug Block Manufacturer MUST make the best.

If you are interested in improving your product—if you are interested in increasing your sales—better write today and get our proposition.

We Do Not Manufacture—We Merely License You to Make This Block

THE DUNN WIRE-CUT-LUG BRICK CO.
CONNEAUT, OHIO
PATENTED IN THE UNITED STATES AND FOREIGN COUNTRIES



Maximum Useful Service

Maximum useful service from an electric generator means the greatest return for the money invested in the machine.

A short, inefficient generator life results from the wear of bearings and commutator and a general reduction in the strength of the insulating material between the electrical conductors.

D L C Generators

Bearing wear is reduced to a minimum in General Electric Company Generators by using large surfaces for bearing parts subject to friction, and automatically oiling them by means of oil rings.

Commutator wear from friction is greatly reduced by using self-lubricating carbon brushes and sparking is overcome by a special field construction.

The strength of the insulating material is retained and consequently its long life is assured by cool operation. This is obtained by means of a fan mounted on the generator shaft.

A costly belt tightening device is unnecessary with these generators as an effective belt tightening jack screw is furnished with each generator.

Our nearest office will be glad to furnish complete information and Bulletin No. 4832.

General Electric Company

Largest Electrical Manufacturer in the World
General Office: Schenectady, N. Y.
ADDRESS NEAREST OFFICE

Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Boise, Idaho.
Boston, Mass.
Buffalo, N. Y.
Butte, Mont.
Charleston, W. Va.
Charlotte, N. C.
Chattanooga, Tenn.
Chicago, Ill.
Cincinnati, O.
Cleveland, O.
Columbus, O.
Davenport, Iowa
Dayton, Ohio
Denver, Colo.
Detroit, Mich.
(Office of Agent.)
Erie, Pa.
Indianapolis, Ind.
Kansas City, Mo.
Keokuk, Iowa.
Knoxville, Tenn.
Los Angeles, Cal.
Louisville, Ky.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.
Nashville, Tenn.
New Haven, Conn.
New Orleans, La.
New York, N. Y.
Philadelphia, Pa.
Pittsburg, Pa.
Portland, Ore.
Providence, R. I.
Richmond, Va.
Rochester, N. Y.
Salt Lake City, Utah.
San Francisco, Cal.
St. Louis, Mo.
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Seattle, Wash.
Spokane, Wash.
Springfield, Mass.
Syracuse, N. Y.
Toledo, Ohio
Youngstown, Ohio

3068

For Texas and Oklahoma business refer to General Electric Company of Texas—Dallas, El Paso, Houston and Oklahoma City
For Canadian business refer to Canadian General Electric Company, Lt'd., Toronto, Ont.

The Clay Worker's Library

BOOKS YOU NEED

Every clayworker desires to do his best. To do one's best, a man must bring to the aid of his OWN knowledge and experience, the knowledge and experience of others. The best practice, the best knowledge, the "know-how" of experience are condensed in these volumes. It will pay you to add some of them to your library.

CLAYWORKERS' BOOKS.

Clayworkers' Handbook	2.00
Clays: Their Occurrence, Properties and Uses (Ries)	5.00
Clayworking Industry of the U. S. (Ries)	2.50
Bibliography of Clays and Ceramic Arts	2.00
Bricks and Tiles	1.20
Economic Geology (Ries)	3.50
How to Analyze Clay	1.00
American Ceramic Society's complete translation—2 Vols.	15.00
Transactions American Ceramic Society—Vols. I-VIII. (Write for prices)	....
Kiln Records (Richardson)	1.00
Henley's Book of Recipes	3.00
Hand Brickmaking (English Edition)	1.00
Brick Drying (English Edition)	1.00
Manufacture of Glazed Bricks	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking (Searle)	5.00
Practical Brick and Tile Book	2.40
Scumming and Efflorescence	.50
Seger's Collected Works (Condensed)	3.50

POTTERY AND CERAMICS.

Notes on Pottery Clays	1.50
The Glazer's Book (E. L. Raes)	1.00
Grand Feu Ceramics	5.00
Architectural Pottery	7.50
Observations on Pottery	.60

DRAINAGE AND SEWAGE.

Sewage & Sewage Disposal (Robinson)	2.00
Sewers and Drains (Marston)	1.00
Practical Farm Drainage (Elliott)	1.50
Hints on Farm Drainage	.25
Land Drainage Engineering (Elliott)	2.00
Sewer Pipe and How to Make It, by Anton Vogt and Jno. A. Turner	.25
Life of Cement, by Wheat. (Write for prices)	

PRODUCER-GAS.

Producer Gas and Gas Producers (Wyer)	4.00
Gas Engines and Producer Gas Plants	2.50
Chemistry of Gas Manufacture (Royle)	4.50
Power Gas and the Gas Producer (Miller)	1.00

MISCELLANEOUS.

Ads That Sell Brick	5.00
Bungalow Book	.50

BUILDING CONSTRUCTION.

Brickwork and Masonry (Mitchell)	3.00
Details of Building Construction	1.00
Practical Lessons in Architectural Drawing	2.50
Our New House—How We Plan to Build It	1.50
Principles of Architectural Design	4.50
Building Construction and Superintendence—Part I, Masons' Work	6.00
Practical Brick Laying (Maginnis)	1.50
Art of Practical Brick Cutting and Setting	.60
Brickwork	.60
Rudiments of Bricklaying	.60
Gilbreth's Brick Laying System	3.00
Building Materials (Middleton)	4.00
Building Mechanics' Ready Reference	1.50
Building Superintendence (Nichols)	1.50
Contracts and Specifications (J. C. Plant)	1.00
Estimating (Nichols)	1.00
Masonry Construction (Phillips-Byrne)	1.00
Strength of Materials (E. R. Maurer)	1.00

ELECTRICITY.

Electricity Simplified (Sloane)	1.00
Electricity (for beginners)	.25
Electrical Circuits	.25
Static Electricity	.25
Electric Lighting	.25
Electric Wiring and Lighting (Knox-Shaad)	1.00
Power Stations and Transmission (G. C. Shaad)	1.00
Practical Lessons in Electricity (Crocker-Cushing-Sager)	1.50

BUSINESS BOOKS.

Business Management, Part I, (J. B. Griffith)	1.50
Business Management, Part II, (Russell-Griffith)	1.50
Commercial Law (J. A. Chamberlain)	3.00
Corporation Accounts and the Voucher System (J. B. Griffith)	1.00
Factory Accounts (Hathaway-Griffith)	1.50

PAVING AND ROAD ENGINEERING.

City Roads and Pavements (Judson)	2.00
Highway Construction (Phillips-Byrne)	1.00
Treatise on Roads & Pavements (Baker)	5.00
Directions for Laying Brick Pavements—Free.	

POWER PLANTS AND FUEL.

Engineering Laboratory Practice (Smart)	2.50
How to run Engines & Boilers (Watson)	1.00
Modern Steam Engineering (Hiscox)	3.00
Tulley's Handbook	3.50
Engine-Room Chemistry	1.00
The Compound Engine (Tennant)	1.00
Gas, Gasoline and Oil Engines (Hiscox)	2.50
Smoke Prevention and Fuel Economy (Booth)	2.50
Boiler Accessories (W. S. Leland)	1.00
Gas Engines and Gas-Producers (Marks-Wyer)	1.00
Steam Boilers (Newell-Dow)	1.00
Steam Engines (W. S. Leland)	1.00

MACHINERY.

Machinery Repair & Maintenance (Barber)	3.50
Hoisting Machinery (Horner)	3.00
Mechanical Engineering (Sames)	2.00
Machine-Shop Work (F. W. Turner)	1.50

Help your prospective customer decide on the style of house he wants, by showing him the many beautiful designs contained in the Bungalow Book. They will make him appreciate the fact that an attractive and substantial brick home can be built at a reasonable cost. Create an interest in clay products by distributing a few of these books among prospective home builders in your city.

Price, 50 cents, postpaid.

BRICK AND CLAY RECORD, 445 Plymouth Court CHICAGO

Bridge the distance between the clay bed and machines by the B. & B. Aerial

Tramway System. Transport your clay quicker and cheaper than ever before—*haul it through the air!*

Hauling the material over the surface is expensive. If the surface is bad —if the roads are hilly, if you've got to bridge creeks or rivers—it's all the more expensive.

The answer is: *Haul it through the air!*

If you're employing an army of pick-and-shovel laborers, and maintaining a string of dump wagons and teams—

Or if you have spent a small fortune in building miles of steel trackage, and are maintaining high-salaried engineers to run expensive locomotives, your production costs are higher—and your profits lower—than they should be.

To eliminate all this hand labor—to make all power equipment unnecessary in the handling of clay—*haul it through the air!*

The B. & B. System (with Yellow Strand Wire Rope) is quick and continuous. Most of its operation is automatic and requires no power. Besides that, it costs so very little to install. Write for catalog 16.

Broderick & Bascom Rope Co.

St. Louis, Missouri

A QUALITY OF MACHINERY ABOVE ALL OTHERS

Christmas

A Green Christmas may be one made green with Greenbacks, and a White Christmas may be one made white by silvery dollars. At all events no Christmas will be as pleasant and as successful as you would like unless you have the money necessary to brighten it for yourself and friends. The money you ought to spend in Christmas Cheer may have been burned up in useless fuel or wasted in needless repairs. We can't be of any service to you in saving what you have already lost, but we can insure you a better Christmas for next year if you will let us prescribe for your case.

First, there is your machinery equipment. It may be weak in spots or pretty generally bad. If one weak unit keeps the rest of the plant limited in production it will pay to replace that defective unit. If it's all defective it will be better to have a general overhauling. We build a line of machinery that is as near faultless as half a century of study can develop and we are willing to go into the matter from your view point if you will give us the opportunity.

After your machinery there is the burning cost. It's more than likely you are wasting half your fuel on burning. Just take a pencil and figure the cost of your fuel for a year and then take half the total and see what a nice lot of Christmas Cheer that would buy. We have saved half the fuel for many a clay worker and ask the opportunity of figuring out the possible saving we can effect for you. After we have shown you, it's up to you whether you save the amount or continue to waste it. The Haigh Kiln has done wonders for others and will for you. Let's figure it out together.

Next there is the drying cost. What does it cost you to dry your product? It's a mighty safe bet for us to promise you a big stocking filler right there on your drying cost. We have been through the drying problem many times and have made good. We have saved a lot of money for a lot of Clay Workers and will be glad to number you among our satisfied list. We have the very dryer which will handle your clay the most satisfactorily and all our driers are made in our own plant and are of the high standard of quality we always deliver.

Finally, we have an organization that is competent to handle any problem in manufacturing clay products no matter in what department. From the clay pit to loading the finished products on the cars we can equip you perfectly and give you the advantage of the best thought on each step of the manufacturing. This group of specialists is worth your while, not only because they are the best attainable, but because they will make your success more sure.

We build every machine and appliance required for the manufacture of Clay Products by all processes. We have a big general catalogue to send you. We also have a new piece of literature on burning and drying.

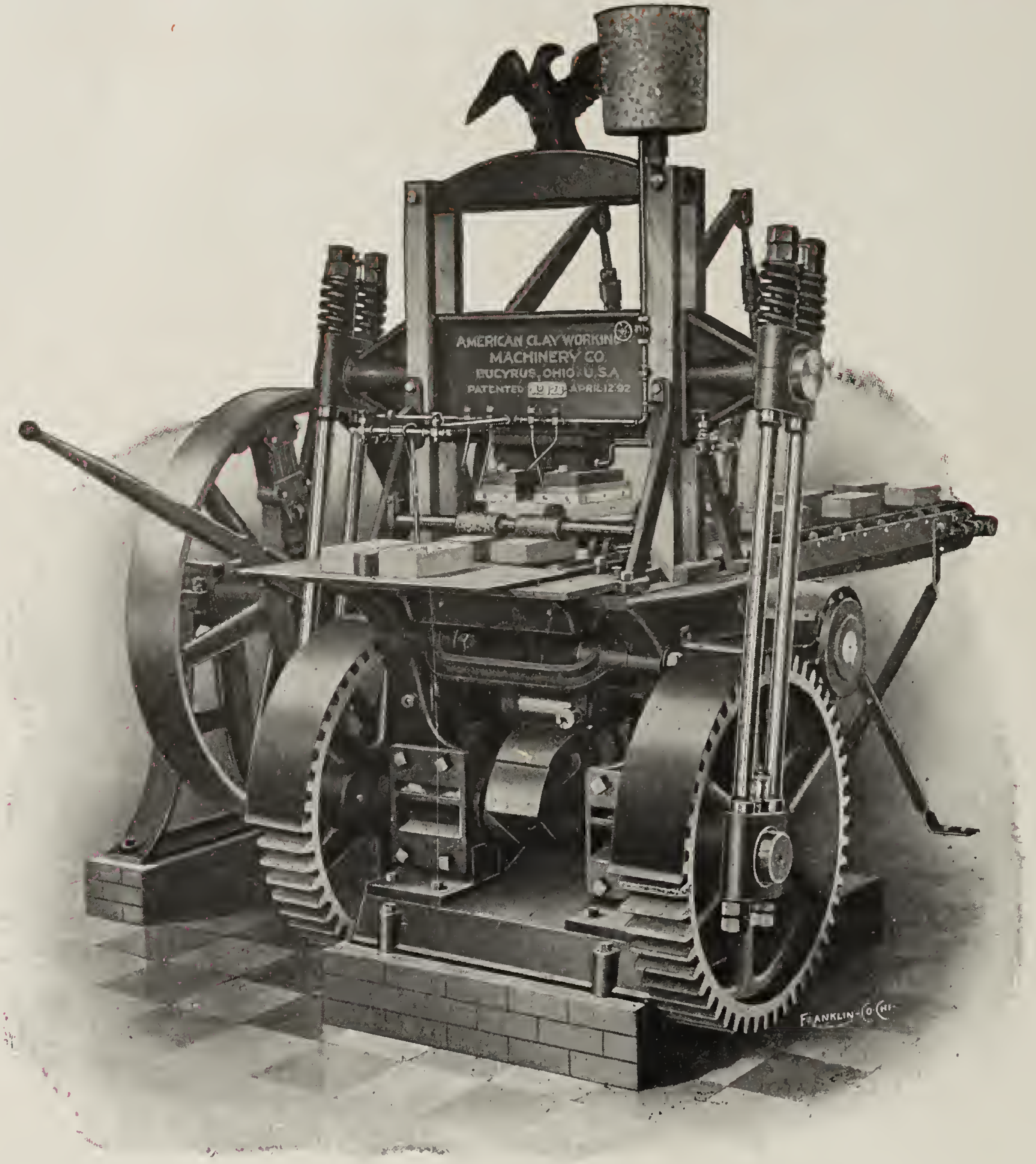
The American Clay Machinery Co.

Bucyrus, Ohio, U. S. A.

BUILT RIGHT
RUN RIGHT

Much the largest manufacturers of Clayworking Machinery in the world. And much the best.

Noah Webster Knew the Eagle



Ask Noah Webster.

In his big dictionary Webster has a lot to say about the Eagle Repress.

You'll find his opinion of the Eagle under various headings, such as "Excellence," Worthiness, Quality, Promise, Fulfillment and Worth.

Webster isn't the only authority on this subject, either. Every brick manufacturer who has used the Eagle Repress knows that what the word authority says on these various words applies to The Eagle Repress.

The Eagle has more points in its favor today than any other press. It was designed and built with a view to successful and continuous operation without repairs. For years it has lived up to this original aim. It has made a reputation deserved and lasting. Those who have used it are pleased with it, and if you are at all interested in dependable machinery the Eagle testimonials we have will interest you.

The Eagle Repress is a paving and front brick machine and will help you make a reputation on these products and will also help you to operate economically. A full description of this or any other appliance or machine used in the clay trade will be sent on request.

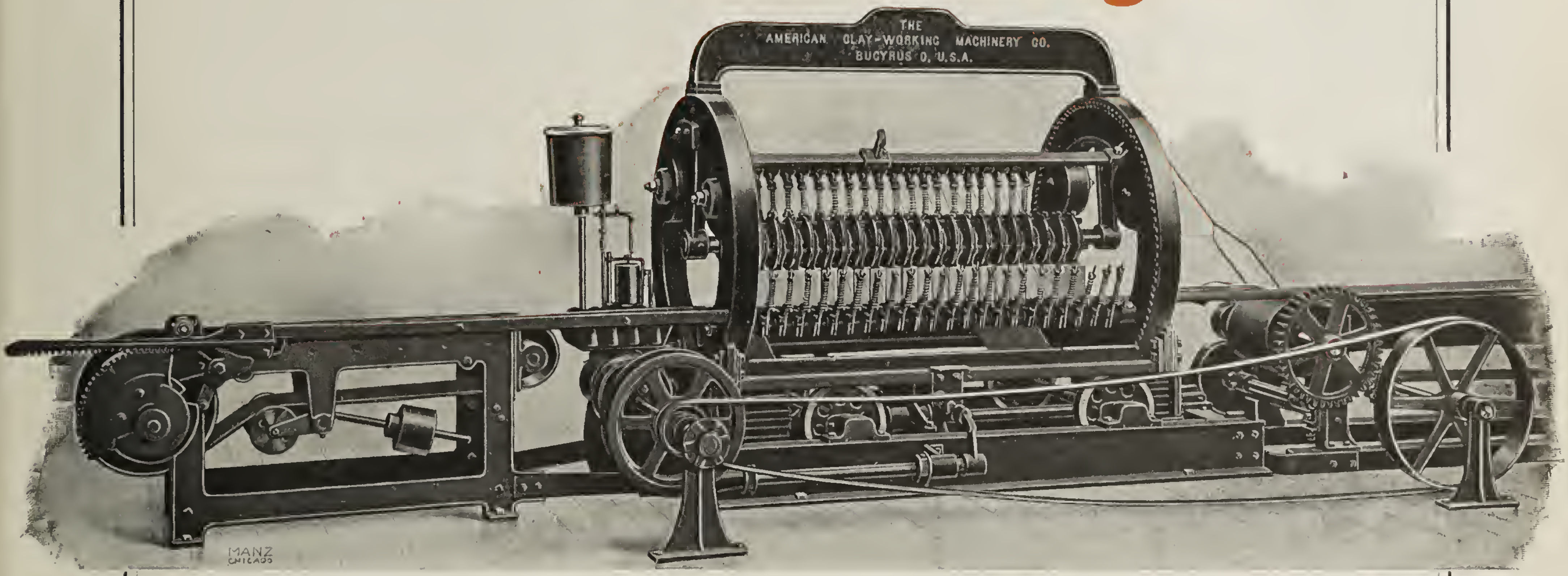
BUILT RIGHT
RUN RIGHT

American Clay Machinery Company

Bucyrus, Ohio, U. S. A.

A QUALITY OF MACHINERY ABOVE ALL OTHERS

"Automatic Is Right"



There is a rightness in our No. 20 Automatic Cutter which reverts to your benefit. The simplicity and excellence of the No. 20 cutter insure its economy and satisfaction. It is carefully designed and as carefully built. Its quality is shown day after day in its continued successful operation without delays for repairs or adjustment.

The No. 20 cutter is used by successful brick manufacturers everywhere and testimonials on its performance will be sent on application.

We build other types of cutters for all classes of clay products and each has a quality back of it which will be found extremely profitable to the owner of the plant. If you need any machine or appliance required for the manufacture of any clay product we will furnish full information on request.

The American Clay Machinery Company

Bucyrus, Ohio, U. S. A.

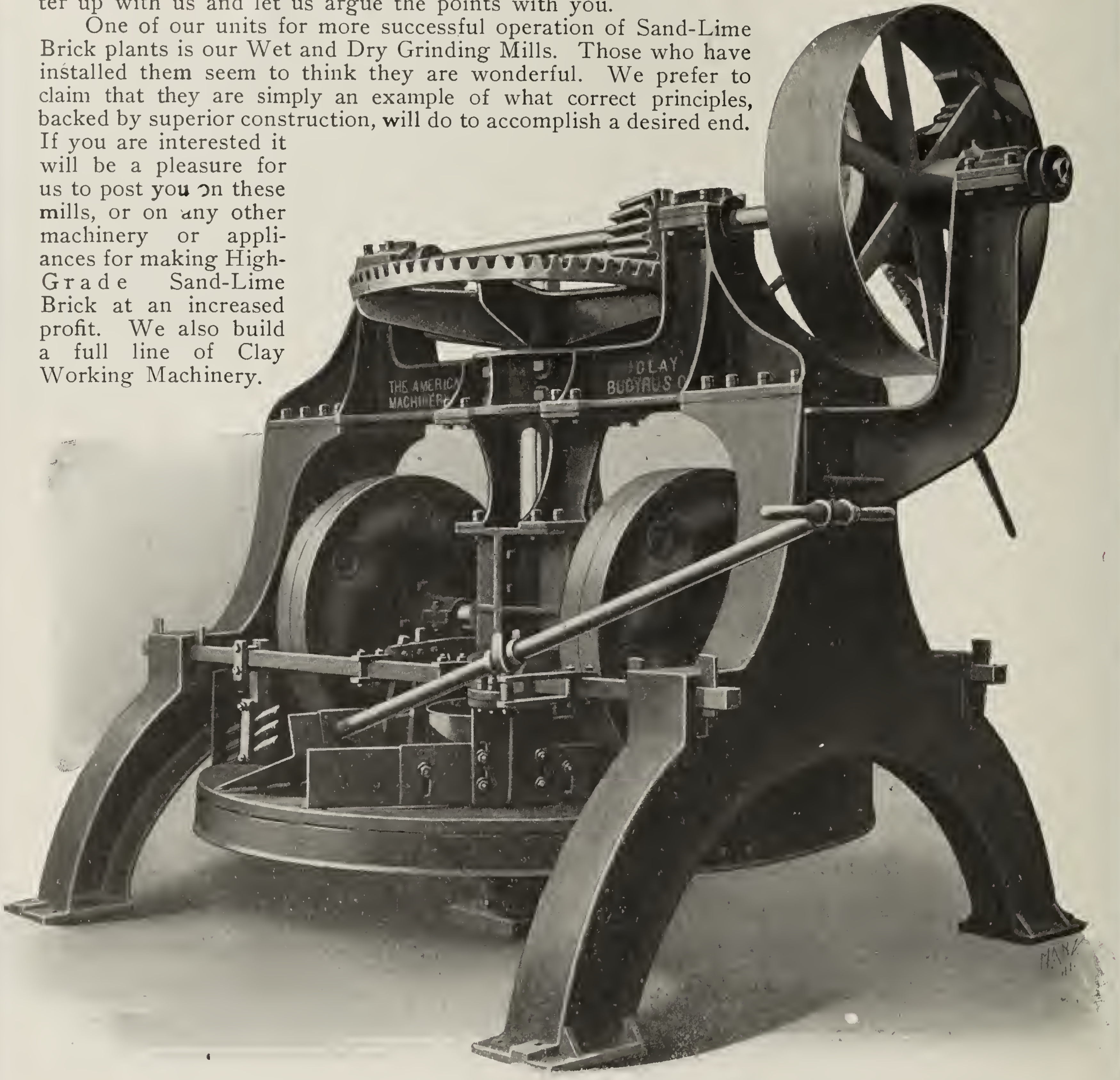
BUILT RIGHT
RUN RIGHT

Much the largest manufacturers of Clayworking Machinery in the world. And much the best.

Others Say We Can Help You

When others say that we can help you to improve your Sand-Lime Brick and increase the capacity of your plant it ought to be worth while for you to listen to their statements until you are satisfied that we can or cannot help you. If you find we can't assist in stimulating your profits it will be time enough for you to tell us that you are not interested; but if we can benefit you, according to the statements of those whom we have already helped, then why not take the matter up with us and let us argue the points with you.

One of our units for more successful operation of Sand-Lime Brick plants is our Wet and Dry Grinding Mills. Those who have installed them seem to think they are wonderful. We prefer to claim that they are simply an example of what correct principles, backed by superior construction, will do to accomplish a desired end. If you are interested it will be a pleasure for us to post you on these mills, or on any other machinery or appliances for making High-Grade Sand-Lime Brick at an increased profit. We also build a full line of Clay Working Machinery.



BUILT RIGHT
RUN RIGHT

The American Clay Machinery Co.

Willoughby, Ohio, U. S. A.

Brick Classified Department

A BARGAIN COUNTER of For Sale and Want Advertising

"Brick and Clay Record" Ads are Result Producers. Cash must accompany all orders.
Rates: Eight cents per word for first insertion; six cents per word for additional insertions. Minimum charge of $1.00 per insertion. If cuts or display type is used, a rate of $3.25 per inch will be charged.

Opportunities to Purchase or Lease Clayworking Plants Cheap

For Sale.

Brick and tile plant in Seattle, fully equipped. Clay suitable for brick and hollow ware, land and water transportation; 12 acres; will sell half for twenty thousand, whole for forty thousand; present value, eighty thousand. Address: 12-BE, care of this paper. 12-2-2P

Large Brick Plant.

Situated in shale regions of Ohio; capable of making all kinds of vitrified or rough faced, shale building brick. Capacity about 50,000 per day; 22 large down-draft kilns, and all machinery complete. Plant is now running and can be inspected at any time.

Will be sold at a great sacrifice. This is a most excellent opportunity for a good brick man. Can be bought for one-third cash, balance in two annual installments. Address 12-BO, care of this paper. 12-2-3

Excellent Opening

for a

White Faced Brick Factory

In a North Carolina town, located on the main line of the

SOUTHERN RAILWAY

are extensive deposits of white burning brick clays, admirably suited for making fancy white and buff brick.

Near by are numerous rapidly growing cities consuming many thousands of brick annually, thus furnishing excellent home markets.

Power is sufficient for all demands at reasonable rates. Coal and wood are obtainable at low costs. Native labor is ample.

This is a proposition that will stand the closest investigation.

Full particulars obtained by referring to file 42205, and writing

M. V. RICHARDS, Land and Industrial Agent, Southern Railway,
Room 1368, Washington, D. C.

Wanted.

Party with some capital to manufacture brick, drain tile, silo blocks, etc., from the only clay bank within 25 miles. Orders for hundreds of carloads can be secured. Stock on hand made from this clay. Box 313, Albert Lea, Minn. 12-2-3

For Sale, on Easy Terms.

Brick and tile yard. Three round, down-draft kilns, 30,000 4-in. tile capacity, good machinery all in first-class running order, steam dryers, cars, railroad switch at yard, good clay, cheap coal. This is a moneymaker, and can be had at a bargain. Also have a large retail coal business. Sold over 500 tons of coal in October. Address: C. T. Wilson, New Sharon, Ia. 12-2-1P

For Sale.

Forty thousand dollar brick plant with equipment complete. Inexhaustible supply of finest shale; unlimited supply of natural gas; three foot vein of coal. Capacity, 60,000 brick per day. Fifteen kilns, 32 tunnel gas dryer—machinery buildings—brick engine and boiler houses—2-story brick store building and company houses. Price, terms, blue prints and photographs upon application. For sale by widow of former principal stock holder, who is now the sole owner, and whose other interests all lie in the south.

Will sell for one-half present appraised valuation. Address: 11-BC, care of this paper. 11-2-3P

Notice to Brick and Tile Makers.

Are you seeking a location? Are you properly located in regard to market, material and fuel?

We have all these factors in favor of our proposition. We have shale and fuel in unlimited quantity. Shale has been repeatedly tested for mud and dry press brick and hollow tile. If you are seeking a location it will pay to investigate what we are offering.

We want some good concern to investigate this rare combination of conditions and operate by paying us a reasonable royalty.

This needs to be seen to be appreciated. Address: Bridgeport Coal Co., Bridgeport, Tex. 11-2-F

For Sale.

One 3-kiln tile plant in Ohio. Everything new and most modernly equipped. Good clay and excellent market. Bad health reason for selling. Address 8-R B. C., care of "Brick." 8-1

Brick and Tile Plant.

For Sale: Modern 3-kiln plant located in one of the county seat towns in Iowa; only plant in county; equipped with Frost boilers and engine and Brewer dry pan, pug mill and tile machine. All practically new and now in operation; sale includes 99 year lease on one of best shale banks in existence. Address 11-B, care of this paper. 11-4-P

For Sale.

An Ohio brick and tile plant. Can manufacture drain tile and put on car for less than $75.00 per kiln—invoice over $150. Sale of ware guaranteed. Will give bond to release purchaser in event of failure to get above results. Machinery good as new. Clay plentiful. Can easily get out 10 kilns per month. Will sell dirt cheap. Got to go quick. Reason will be given. Address: 12-BC, care of this paper. 12-2-1P

FOR SALE
BRICK AND TILE PLANT.

We offer for sale 29 acres of land located on the river bank in Minneapolis, and a ten compartment gas producer "Youngren" kiln, with complete steam dryers and machinery for **"soft mud" or** "wire cut" brick and tile. The land contains clay enough to last for twenty years. Limitless market for products in Twin Cities. Property owned by men engaged in other lines of business. The practical stockholder having recently died, property can be purchased on most favorable terms, or will exchange for property that will require no personal supervision. Everything in running order, and brick can be made the year around. Direct all communications to Chas. M. Way, Care Minneapolis Bedding Company, Minneapolis, Minnesota. 12-2-4

Advertisements in "BRICK AND CLAY RECORD" are indexed. Turn to page 4.

CLASSIFIED DEPARTMENT

For Sale.

Brick and tile factory in southern Wisconsin—well equipped. Write for particulars. 419-421 Washington Bldg., Madison, Wis. 12-1-P

FOR SALE.

Almost 1,000 acres of flint fire clay, coal on surface, for sale at a bargain. Address: A. P. P., Coleman Bldg., Philadelphia, Pa. 12-2-1P

For Sale.

Well located architectural terra cotta plant in operation. Large brick building. Valuable machinery, kilns, siding. Will sell or might consider partnership with one who has knowledge of the business. A. W. Dresser, Burlington, N. J. 12-2-P

To Paving Brickmakers.

The undersigned has an abundant supply of shale suitable for paving brick which it desires to have utilized.

This shale has been analyzed and tested and it is believed there is nothing superior to it for the purpose indicated. It is located about eight miles east of the Terminal Railway, East St. Louis. It is of easy access, on the line of a well equipped railroad by which the raw material, or the manufactured product, can be brought to East St. Louis. Address St. Louis & O'Fallon Coal Co., East St. Louis, Ill. 12-6-P

FOR SALE AND EXCHANGE BY FRANK P. CLEVELAND.

Illinois—Coal and Farm Land, 320 acre tract near Pickneyville, Perry County; fair set of farm buildings on the place; price $50.00 per acre; this tract adjoins railroad.

Tile and Brick Plant at a good shipping point in La Salle County, Illinois; capacity 20,000 brick per day; will sell plant, cottage and 10 acres of land for $5,000; terms $3,000 cash.

Coal Mine and Brick and Tile Plant in Scott County, Illinois; also coal rights under 900 acres of land; capacity of plant 30,000 brick and 15,000 four-inch tile per day; this property can be bought for $50,000; owner will arrange terms.

Write me for detailed descriptions.

I bring buyers and sellers together. No matter where located, if you want to buy, sell or exchange any kind of business or property, address Frank P. Cleveland, 4980 Adams Express Building, Chicago, Ill. 12-2-1

SAND-LIME BRICK

An excellent opportunity for its manufacture under exceptionally favorable conditions.

Address:

H. B. SKEELE
Savannah, Ga.

Business, Plant or Factory Wanted.

Am looking for a good opening; will buy whole or part interest. Give full particulars in first letter. Address: Cash Buyer, Box 4980, Cherry Valley, Ill. 12-2-P

Wanted.

A good shale or clay deposit, with good shipping facilities and market. Indiana or Ohio preferred. Box 33, Muncie, Ind. 12-2-1P

For Sale.

Brick plant, 50,000 capacity, good clay, 15 kilns; 43 miles from Birmingham, Ala. Good territory, good freight rates, good business. Address: L. W. Clordy, Childersburg, Ala. 12-2-4P

Investment.

Capital invited to build additional dryer and kilns. Middle west plant built this year and now in operation. Clay and market the best. Stiff-mud brick, drain tile and building tile. We invite inspection by bona-fide investors. Address: 12-A, care of this paper. 12-2

POSITIONS WANTED

Position Wanted.

By first-class brick plant superintendent of wide experience. One who can deliver the goods. Good references. Address: 12-D, care of this paper. 12-1

Wanted.

Position as superintendent of building brick plant, dry press or stiff-mud. Experienced in construction work, up-keep of machinery, manufacturing and burning of high-grade brick. Sober, and good manager. Address: 12-BB, care of this paper. 12-2-1P

Position Wanted.

As manager or superintendent of plant, with parties desiring the services of an A-1, up-to-date brickmaker and clayworker, 30 years' experience making all kinds of clay ware. Make any kind of brick or tile, high-class face brick, paving brick, fire brick and fireproofing. Handle any kind of machinery, burn any kind of kiln, use wood, coal, oil or gas for fuel. Handle any kind of labor, know what a day's work is, and how to get it. Understand the business thoroughly from clay pit to office. Can make plans, build kilns, install machinery and build plant complete and operate same, of any size or capacity. Am employed, but desire a change. Best of reasons given. Can furnish best of references as to ability and character. Am married, small family; strictly sober, and would give trial of 30-60 or 90 days to demonstrate my ability as being able to do just what I claim to do. Could make a change on short notice any time. Please address all replies to 12-BD, care of this paper. 12-2-2

HELP WANTED

Wanted.

To take charge of our machine room a first-class man who thoroughly understands Boyd presses and American dry pans, one who knows how to manufacture high-class face brick. Must thoroughly understand boilers and engines, and know how to keep machines in order and running. Position permanent the year around. Address: 10-B A, care of this paper. 10-2-TF

Wanted.

First-class mechanical draftsman, who has had experience in clayworking machinery. Address: 11-BD, care of this paper. 11-2-3

Wanted.

Superintendent for fire clay plant No. 5 and 6 veins. Must be thoroughly experienced in the manufacture and burning of hollow ware and fireproofing. Apply immediately to the Metropolitan Paving Brick Co., Canton, O. 12-2

Wanted.

Superintendent and general manager to take charge of brick plant working stiff mud, producing 40,000 to 50,000 brick daily. We will require a man who understands every feature of brickmaking, must be sober, and active. State salary and send references. H. Weil & Bros., Goldsboro, N. C. 12-2-1

Wanted.

First-class superintendent for paving brick plant. Location, Ohio. Must furnish references. Must be familiar with the present requirements of paving block in the Middle West, and be able to give results—both in quality and quantity. Address: 12-BA, care of this paper. 12-2-1

Brick Salesman Wanted.

One capable of handling large con- with yearly output of 35 million face, paving and common brick. Product of recognized merit in wide territory. $5,000 investment required. Position open January first. Address: 12-B, care of this paper. 12-2

MACHINERY WANTED

Steam Shovel Wanted.

Thew "O" preferred, must be in good condition. Address Roger Moore's Sons & Co., Wilmington, N. C. 12-2-3

Wanted.

A second-hand vertical pug mill, Griffith & Wedge type preferred. Address: Pfaltzgraff Pottery Co., York, Pa. 11-2-3-P

DESIGNERS Trautwein System of Waste Heat Drying **BUILDERS**

OF

COMPLETE CLAYWORKING PLANTS

CONSULTING CLAY WORKS ENGINEERS
DRYER SPECIALISTS

Trautwein Dryer & Engineering Company
417 So. Dearborn Street
CHICAGO

For Sale.

25 h.p. engine, boiler, crusher, tile machine and dies, $200.00. E. Finch, South Park, Ohio. 12-2-1

For Sale.

Two 4-mold Boyd dry presses, one equipped for Roman brick, excellent condition. Price, twelve to fifteen hundred dollars. Tuna-Valley Pressed Brick Co., Bradford, Pa. 12-2TF

Tile and Brick-Making Equipment Machinery and Supplies

For Sale.

16,000 lath pallets in A-1 condition. Will sacrifice for quick sale. James C. Riley, Bloomington, Ill. 12-2-3

For Sale—Machinery.

Entire equipment of brick and tile plant; machinery in good working order. Very reasonable to cash buyer. Address: J. W. Spencer & Son, Rocky River, O. 12-2-1

For Sale.

"A" Martin brick machine and pugmill, 9,000 white pine pallets, castings for a 10-arch brick kiln. Mold sander and 50 brick molds, good as new. Address: B. Frank Beard, Wrightsville, Pa. 12-6-2

For Sale.

1—lot new 48-in. chilled clay rolls.
1—60 h. p. Columbus gasoline engine and 66-in. x 32-ft. Cummer self-contained dryer, with automatic stoker. Used six months only.
1—Bonnot automatic side cutting table, capacity 100,000.

All in good condition. Address: Hydraulic Press Brick Co., St. Louis, Mo. 9-TF

For Sale.

One Fate gravity elevator, and one Brewer rotary silo block cutter. Above are brand new, having never been used, owing to change in plans. Jackson Tile & Brick Co., Jackson, Minn. 12-2-2

Wanted.

All Steam Users to do without using any kind of compounds or chemicals and still have clean boilers. Write "Otis," No. 390 Norfolk Ave., Buffalo, N. Y. 1-12-X

For Sale.

Hercules soft-mud brick machine, turntables, Pulsometer pump, 35 h. p. steam engine. All in good condition. W. E. Lyon & Co., Carthage, Ill. 4-tf

For Sale—Machinery.

We offer special prices for a limited time on one Victor repress, steam silica press, single die hand repress. Address: Box 8-A, care of "Brick and Clay Record." 8tf.

For Sale.

Four sets of kiln bands, ties and doors. Good condition. Best bid gets them. C. B. Lyon & Son, Sta. G, Memphis, Tenn. 9-2TF

For Sale.

1 American Giant auger machine.
4 American represses complete.
1 Cutting table for same. All nearly new and cheap.

The Denison Clay Co., Coffeyville, Kan. 11-TF

For Sale.

1 Raymond 8-ft. single-geared pugger.
1 Raymond Daytonian No. 2 auger brick machine.
1 Raymond Cyclone No. 20 disintegrator.
1 W. P. Grath hand-power dry press.
Some extra belts, shafting and pulleys.

Address: A. C. Gordon, Weiser, Idaho, Box 75. 11-2-3

For Sale.

1 J. D. Fate Imperial machine, complete with down-delivery attachment.
E. M. Freese "GA" brick machine.
American combination brick machine.
Madden No. 5, 5-B, 5-C and 6-D machines.
24-in. x 24-in. and 16-in. x 16-in. smooth roll crushers.
Bensing automatic side and end cut tables.
13x18 Atlas H. D. engine.

All in first-class condition. Arbuckle & Co., Rushville, Ind. 12-2TF

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Rebuilt Engines and Boilers at Reduced Prices.

Corliss Engines.

18x42 Lane & Bodley, 18x36 Ohio Heavy Duty, 16x42 Allis, 14x36 Sioux City, 12x36 Allis, 12x30 Hamilton.

Automatic Engines.

16x16 Ball & Wood, 10x16x12 Buffalo Compound, 13½x15 Taylor, 13x16 Atlas, 13x12 Phoenix, 12x14 Green, 12x12 Armington & Sims, 10x10 Russell, 8½x10 Gem, 8x14 Noyes.

Throttling Engines.

20x24 H. S. & G., 18x24 Atlas, 14x18 Sinker-Davis, 14x14 Lewis Vertical, 13x16 Erie, 12x16 H. S. & G., 12⅜x12 Wells, 10x16 Bass, 9⅜x16 Brownell, 8x10 Erie, 6x6 Erie.

Stationary Boilers.

72x18, 66x16 high pressure, 72x18 standard, 72x16, 66x18, 60x16, 60x14, 54x14, 48x14, 44x14, 44x12, 42x12, 36x16, etc.

Firebox Boilers.

100, 80, 60, 50, 40, 35, 30, 25, 20, 16, 12, 10 and 8 horsepower, etc.

Vertical Boilers.

50, 40, 35, 30, 25, 20, 16, 12, 10, 8, 5 and 3 horsepower, etc.

Heaters.

All sizes, open and closed.

Pumps.

All sizes, single and duplex.

Electrical.

120 kw., belted, a. c. generator, complete with switchboard, 20 kw. generator, direct connected to 8x10 Economic engine, 18 kw. belted generator, and smaller sizes; also large stock of motors.

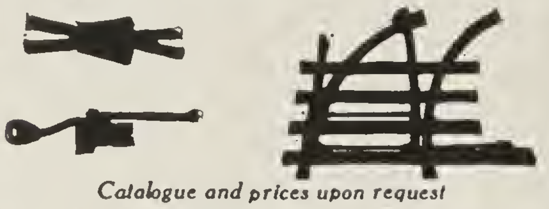
Miscellaneous.

Saw mills, lathe mills, edgers, cut-off saws, resaws, blowers, exhaust fans, tanks, etc. Write for list. Also a full assortment of new machinery. SOLE manufacturers of the celebrated "LEADER" INJECTORS AND JET PUMPS. Send for circular.

THE RANDLE MACHINERY CO.,
1733 Powers St., Cincinnati, Ohio.
10-TF

FROGS, SWITCHES, CROSSINGS

Stands and Portable Track for all weights of rail for Quarries, Brick and Tile Yards, Industrial Plants and Contractors' use.



Catalogue and prices upon request

THE INDIANAPOLIS SWITCH & FROG CO.
SPRINGFIELD, OHIO
Sales Offices
New York, Chicago, Kansas City, Spokane, Portland, Seattle, Los Angeles, San Francisco

FOR SALE.

One Berg 4-mold dry or sand-lime press. Only been run a short time. Standard Brick Co., Sta. B, Charleston, W. Va. 12-2-4

For Sale.

At a bargain, brick machine, pugmill, car, friction, shafting, kiln doors, grates, racks and pallets for 90,000 brick. Going out of business. Sanborn Brick & Ice Co., Portage, Wis. 12-2-2P

For Sale.

Cord wood for sale. Soft wood, $3.25 per cord car lots, f. o. b. East Peoria. Address: Brown Realty Co., Peoria, Ill. 12-2

Brick Machinery For Sale.

190-ft. section Jeffrey No. 110 chain-pan conveyor; Penfield No. 20-A plunger brick machine; Raymond "Columbia" double-mold steam repress; 6 Carnell hand represses; portable track; 100 light Colt's acetylene gas machine; 2 80-h. p. boilers; pulleys, shafting, etc. Powhatan Clay Mfg. Co., Richmond, Va. 11-2-5

Sole Importers in the United States of

PRECIPITATED

Carbonate G & S of Barytes

The only preventive for scum and discoloration on facing brick and terra cotta; neutralizing the sulphate of lime in the clay and water. Orders Filled from Stock Without Delay.

Red Slip Clay.

Circulars and Particulars on Application

GABRIEL & SCHALL

P. O. Box 1712 **205 Pearl St., N. Y.**

Steel Rails

All sections New and Relaying.
In stock for immediate shipment.

Second-hand rails cut to any length desired for all purposes.

M. K. Frank, Pittsburg, Pa.

For Sale Cheap.

One Monarch soft-mud machine, one Wellington sander, one crusher. All in excellent condition. Have no use for them. Kern County Brick Co., Bakersfield, Cal. 12-2-P

For Sale.

I desire to sell my entire line of soft-mud brick machinery consisting of 5-mold brick machine, either horse or steam power, 15,000 to 20,000 brick capacity per day. Iron pugmill, sand grinder and sifter, 12 brick molds, 9x4⅜x2½, used one season. 3 single wheel and single deck trucks, 3 double wheel and double deck trucks, 1 strike knife, and 3 or 4 old ones. I cup elevator. 14,000 pine pallets, 34x10½ in. wide, in good condition. Line shafting and pulleys. All in running order.

I can fit some one up with a full line of soft-mud brick machinery for less than 25 cents on the dollar, if sold all together, or I will sell separately.

Reason for selling: have changed to stiff-mud process. For details and prices, write to W. H. Horrum, Auburn, Neb. 12-TF

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Trade Marks Registered
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Established 1895.

HUBERT E. PECK, Patent Attorney
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DO YOU **WANT** An Employee? A Position? To Buy Anything?

HAVE YOU **FOR SALE** Used Machinery? Land, Plant or Anything Else?

"Brick and Clay Record" Advertisements Bring Returns

Mention "BRICK AND CLAY RECORD" when writing to advertisers.

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You have

Belt Troubles?

We have

The Remedy:—

Special construction and treatment for
conditions of each individual
plant

THE R & S BELTING CO.

MAIN DRIVES
ELEVATING
CONVEYING
ENGINEERS
(services free)

Tell us your

Belt Troubles

We'll write you

The Remedy

L. P. Shafer

R & S Belting Company

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Mr. Clayworker! Just

Do You Want to Buy?

The Time

Now is the time for you to look around your plant and see what you have that you no longer need, or what you should have but are not financially able to buy. No doubt you have numerous items of equipment that you are no longer using by reason of having adopted improved methods, that some other manufacturer who is operating his plant on a much smaller scale, may be in crying need of, but financially unable to purchase now; and the things you may regard as practically worthless (because you have no use for them) if advertised in the classified columns of "Brick and Clay Record," would find a ready sale to the other fellow.

The price at which you would be willing to sell would not only convert these items of equipment into money for you, but would be regarded as a real bargain by the purchaser, and help him improve and increase his product to a point where he could afford to buy new equipment, as you have done.

If you have certain machines that, although still in use, are outgrown, advertise them this winter and you will find a ready buyer, and thus be enabled to install, next spring, the larger machine you so badly need, but would otherwise feel unable to buy now for next year. There is always some other manufacturer not quite so big as you that your machine would be large enough for, and the result of a deal between you would be highly beneficial to both.

It also applies in still another way. You may wish to increase your capacity, but do not feel like standing the expense of a new machine. Some other manufacturer—because he has installed a still larger machine, or because his present outfit was not suited to his clay or shale—wishes to dispose of just such a machine as you want. His machine is almost as good as new, but he is willing to sell it cheap in order to make room for the new equipment. Let him know your wants through an ad in the classified columns.

BRICK & CLAY RECORD, 445-

One Moment, Please

Do You Want to Sell?

The Place

Through the Classified Ad Dept. of the New Year's Number of "Brick and Clay Record." It offers you an exceptional opportunity to make known your wants to the clay-products manufacturers. This issue will go to practically every active clay-working concern in this country and Canada—over 10,000 in all. Out of this large number who would see your ad you would be sure to find some looking for just such equipment as you want to sell, or who are trying to dispose of a machine—which their plant has outgrown—but which would just meet with your requirements.

Do You Want to Sell an

Auger Machine
Pug Mill
Repress
Disintegrator
Boiler or Engine
Turntable
Shovel
Dry Pan
Fan or Blower
Mine Pump
Hoist
Crusher or Pulverizer
Clay Plow or Gatherer
Conveying System
Car or Truck
Pallets or Trays
Clay Feeder
Or anything else used in the manufacture of clay products?

Do You Want to Buy

Any of the above items of equipment?

Do You Want to Hire

A superintendent or manager to take charge of your plant?
Make your wants known through the Classified Ad Department, January First Issue.
Rate: Eight cents per word for first insertion; Six cents per word for each additional insertion.

447 Plymouth Court, Chicago, Ill.

ORIGINAL Boss SYSTEM

DRYING AND BURNING

A Common Sense Application

The Boss Ten Hour Dryer

Dries brick in ten hours time for less than 5c per thousand.

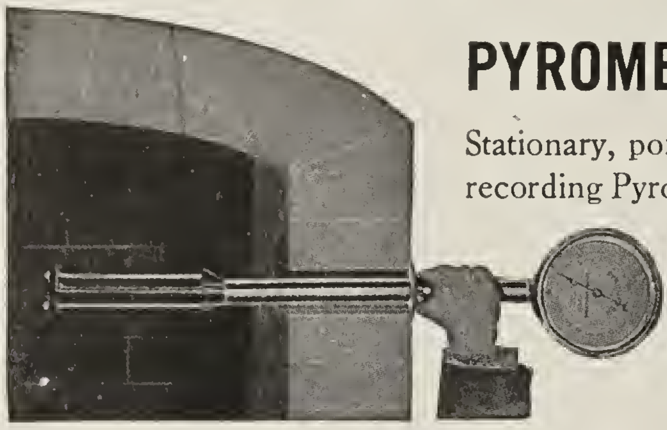
The Boss System of Burning Brick

Burn your brick with FORCED DRAFT and cut your fuel bill HALF IN TWO.

WRITE FOR CATALOG

JOHN C. BOSS COMPANY, ELKHART, INDIANA

ORIGINATORS OF THE PRINCIPLE OF DRYING AND BURNING BRICK WITH AIR UNDER PRESSURE



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Stationary, portable and recording Pyrometers to 1200 and 3000 degrees

THE BROWN INSTRUMENT CO.
Philadelphia, Pa.

THE RICHARDSON-LOVEJOY ENGINEERING COMPANY
COLUMBUS, OHIO
CERAMIC ENGINEERS
FACTORY ARCHITECTS

Geological Examination of Properties
Clay Testing
Investigations of Manufacturing Propositions
Plants Designed, Construction Superintended and Operations Directed
Driers, Furnaces, Kilns
Remodeling Old Plants Given Special Attention
Development of New Lines of Products

Pamphlet, "Ceramic Engineering." Free

Absolute Control of Temperatures in all Kinds of Kilns and Furnaces
Heraeus Le Chatelier
PYROMETER
Recommended by the highest authorities

For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas, Accumulators; and by Boiler Inspectors, Schools and Colleges.

Heraeus Patented Electrical Furnaces
For Laboratory and Experimental Use.
Fused Silica Ware of Every Description at Moderate Prices
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of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature, whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information Pamphlets and References on Application

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An Oil Burning System

Of the *Tate-Jones* type saves time, labor and fuel, and insures a very uniform product. It is easy to install and has many advantages over any other type.
Let us explain it to you.

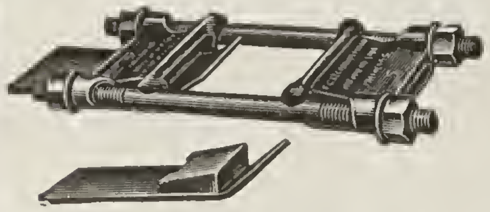
Tate-Jones & Co., Inc., Pittsburgh, Pa.

SEE WHERE THE ARROW POINTS—

It Shows the Simple, Effective Door Frame Connection of the

TECKTONIUS LUG

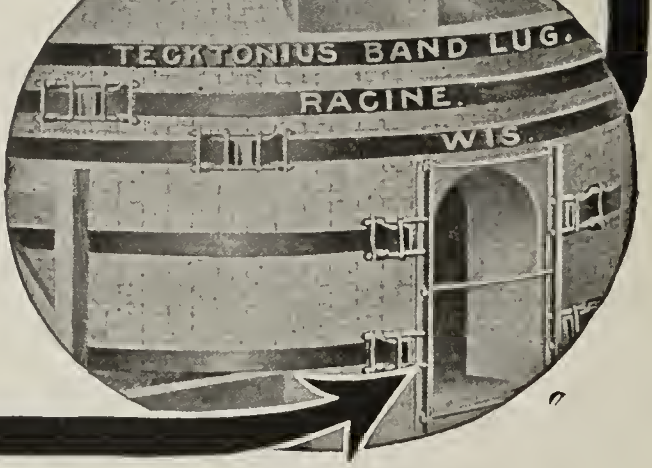
It is "Penny wise and pound foolish" to try and adapt some home-made, troublesome, unsafe, makeshift for banding your kilns. The Tecktonius Lug is



Cheaper, Stronger,
Safer, Neater,
Easier Attached and
Lasts as Long as the Bands

Write for our booklet "Lug Facts"

E. C. TECKTONIUS MFG. CO.
Racine Junction, Wis.



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We'll Write Your Ads

Ad writing is brain racking work. It takes time, thought and energy. Let the other fellow do it.

Spend $5.00
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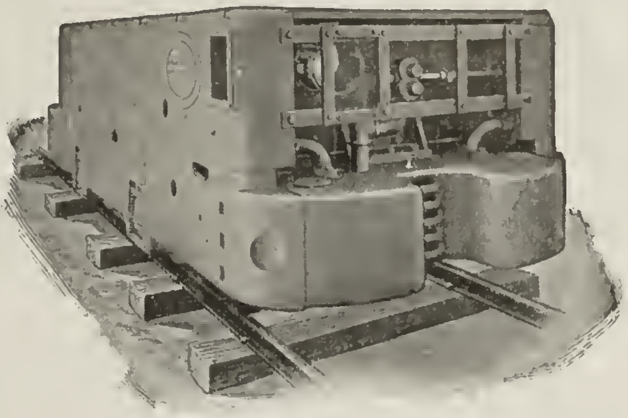
"Ads that Will Sell Brick"

Written by an expert ad writer. 19 pages splendid reading articles accompany the ads.

Brick and Clay Record

445 Plymouth Court **Chicago, Ill.**

Gasoline Haulage Motors



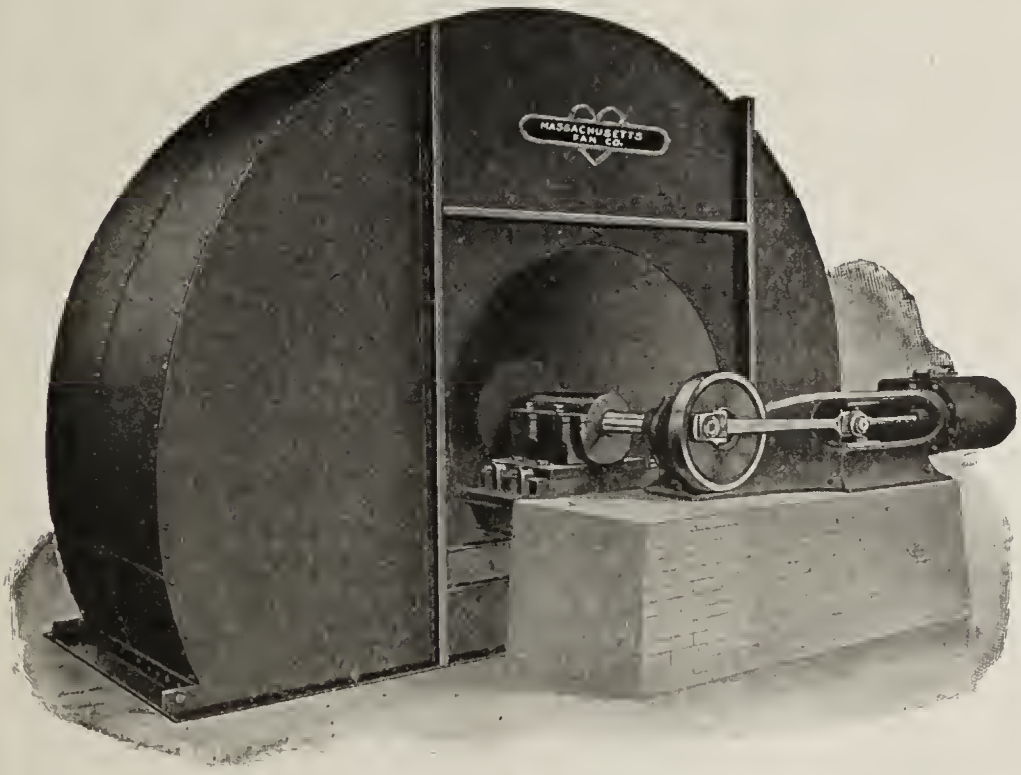
UNDERGROUND TYPE.

Over 30 different companies using these motors for their main haulage.

Write for Bulletins.

GEO. D. WHITCOMB CO.
Rochelle, Illinois

MASSACHUSETTS FANS
FOR CLAY WORKING PLANTS



STANDARD TYPE OF WASTE HEAT FAN.

WE make a new friend every time we sell a

Waste Heat Dryer

Our experience is at your service. Each clay is different and a successful Drying System *must* be planned for *that* clay. Our advice is free, our apparatus inexpensive and soon pays for itself by increased profits from your yard.

Massachusetts Fan Co.
WATERTOWN, MASS.
Cleveland Office: Rockefeller Building
2-38

We advance the price Jan. 1

"Brick and Clay Record" is the biggest value ever given in a trade publication. Issued every two weeks as it is, and brimful of good things for the enterprising clay manufacturer, it has been, at $1 a year, the greatest bargain ever printed in periodicals of this nature.

Now $1 Brick and Clay Record $2 Jan. 1

This price of $1 a year to all subscribers in the United States and $2 a year to subscribers in foreign countries, was made, however, when paper was far cheaper than it is today, when the cost of printing was far less, when "Brick and Clay Record" was not such a big magazine as it is today, and when only twelve issues a year were printed.

In January, 1911, it was deemed advisable to issue the magazine as a semi-monthly, thus giving its readers twenty-four numbers every year instead of twelve. There was some question as to whether the subscription price should not be increased at that time but it was decided to give the low rate a fair test.

The magazine has been growing each year. New departments have been added, new features have been inaugurated and improvements have been made from time to time until "Brick and Clay Record" has outgrown the $1 class.

We wish we could continue to let you have this magazine at the $1 price, but we can't, and use sound business judgment. We are forced to raise the price, but before we do it we want to give you warning. We want to be fair with you.

Beginning with Jan. 1, 1913. the new price of a year's subscription is going to be $2 a year for all subscribers in the United States. In Canada and other foreign countries the price is going to be $3.

It is to your advantage, then, that you pay for as many years as you can conveniently, as you will save $1 on every year that you subscribe for now.

Many of our subscribers have already shown their appreciation of "Brick and Clay Record," and sent in checks for various amounts to renew their subscriptions.

Clyde Lamond (Potomac River Clay Works) Alexandria, Va., sent in $10.00, and in his letter said—"'Brick' and I have been partners for so long that I would not like to be without it, and it is with great pleasure I look for its coming twice a month."

J. S. Haggerty, Detroit, Mich., wrote us under date of the 27th inst., as follows: "Enclosed we are sending you check for five years' subscription and will have you send same direct to our superintendent, H. Moleskey, Dearborn, Mich."

Nova Scotia Clay Works, Ltd., Halifax, Canada, sent in $10.00 in payment of five years' subscription.

Allen & Shultz, Waynesfield, Ohio, remitted $5.00; Reading (Pa.) Shale Brick Co., $5.00. Jenkins & Reynolds Co., Chicago; R. B. Tyler Co., Louisville, Ky., and many others have sent in renewals for from two to five and even ten years.

If "Brick and Clay Record" is of value to these clayworking concerns, why would it not be of value to you?

Slip in a Dollar Bill—We Take All the Risk

You don't have to bother about money orders—just tuck a dollar bill in the envelope and mail it to us at once.

FILL THIS OUT AND MAIL TODAY

BRICK AND CLAY RECORD
445-447 Plymouth Court, Chicago, Ill.

Gentlemen:

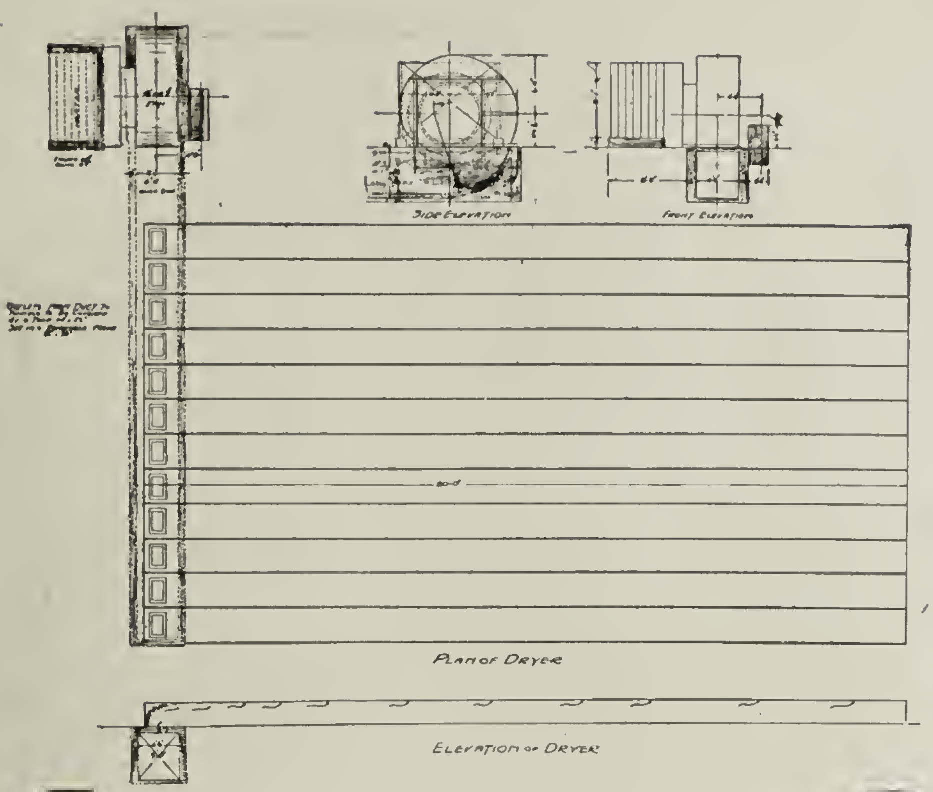
Enclosed find $____________ for which advance my subscription from the date of its expiration for ____________ years.

Name________________________

Postoffice____________ State____________

County____________ St. and No.____________

R. F. D. No.____________



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For the Utilization of Exhaust Steam from Engines or Pumps, Fan, Engine, Heater and Plans supplied by the Green Fuel Economizer Co. to the Goshen Brick Co., Goshen, N. Y.

DRY BRICK
365 DAYS PER YEAR

If you have a Green brick drying equipment, you can dry brick 365 days per year and 24 hours per day if you want to. You can maintain an even rate of drying, no matter whether the day is hot or cold, humid or dry.

If you have a Green Positivflo Heater all of the steam pipes are located in a small space and are not subject to freezing or water hammer. The Positivflo Heater can also use either live or exhaust steam. If the exhaust steam is used, the drying costs you practically nothing.

If you are interested in increasing the capacity of your dry room and of being independent of weather conditions, write to us stating your conditions, accompanying the letter with a sketch and we will give you our recommendations, and possibly we can show you how to double the capacity of your present room with very little additional expense.

Write for a copy of our catalog "B105," "On Drying Brick and Tile," and also catalog "B127" on Fans.

The Green Fuel Economizer Co.

Matteawan, N. Y.

New York City, Boston, Chicago, Atlanta, San Francisco
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Engineers: Builders of Green's Fuel Economizers, Fans, Blowers, and Exhausters, Steam Air Heater Coils, Waste Heat Air Heaters, Mechanical Draft, Heating and Ventilating and Drying Apparatus, Draft Dampers and Engines.

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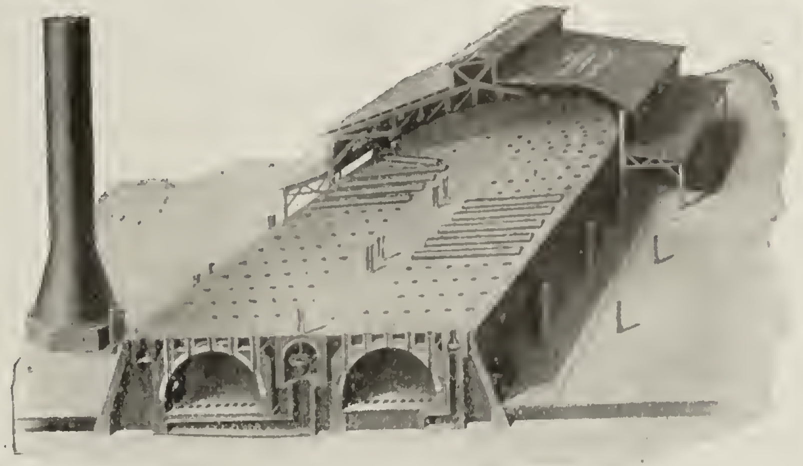

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CONTINUOUS
TUNNEL KILN
FOR
CLAY PRODUCTS

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Containing Many Nuggets of Valuable Clayworking Experience

We are receiving many orders for our recently-issued volume of Seger's Collected Works. Every clayworker has had an opportunity at some time or other to read some of the articles from the able pen of Hermann August Seger, and his writings have served as a base for progress in clayworking in every civilized country in the world. Seger's Collected Works, as issued by us, contains a collection of the articles that we think to be of the utmost value to our readers, and you could make no more profitable addition to your library shelves than by securing a copy of this work. It is handsomely bound in silk cloth, stamped in gold, and contains 304 pages of the best technical information. The size of the book is 6x9 in. Place your order at once before the edition is exhausted. Price $3.50, postpaid.

Book Department
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PLYMOUTH COURT, CHICAGO

The Federal Clay Product Co.
Mineral City, Ohio
Fire Brick for Kiln Work Made a Specialty

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER
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BRICK MAKERS

Many of the largest users in your line, after costly competitive tests and experiments, are now specifying—

Evens & Howard Fire Brick

BECAUSE OF
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We will be pleased to furnish complete information and quote prices on request.

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Established 1856
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Our "Henry Maurer" No. 1 quality Fire Brick is recognized throughout the country as a standard article. We make all shapes and sizes for kiln-work and all other requirements. Catalogues on application. We solicit your inquiries.

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Incorporated 1870
—— MANUFACTURERS OF ——
Dover and Buckeye Fire Brick
Unexcelled for Kiln Purposes
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FIRE BRICK

Two of the many hundred kilns built of these famous brick. Are you using them?
Write for price and catalogue.

Chicago Retort & Fire Brick Co.
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ADS
that will sell
BRICK

Are found in the NEW BOOK on how to Sell BRICK and CLAY PRODUCTS

This book will be sent you, all charges prepaid, upon receipt of your check, money order or draft for

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Don't worry about how you'll get up an ad to sell Clay Products, consult the Clay Book, it will give you good ideas.

CLAY PRODUCTS ADVERTISING CO.
Care of "Brick and Clay Record"
445 Plymouth Court, Chicago

The INTEREST of the Vitrified Brick Manufacturer is with the taxpayer and property owner—and street user.

BUILD **BRICK STREETS** Exactly as WE SAY

Your demands are then met. Reasonable in first cost. Lowest in cost of maintenance. Greatest in satisfaction to the user. Most Sanitary.

Send for "IDEAL CONDITION," "THE PERMANENT ROADWAY," "PROPER CONSTRUCTION OF BRICK STREETS." **SENT FREE.**

WILL P. BLAIR, Secretary

National Paving Brick Mfrs. Association

Locomotive Engineers Building,
Cleveland, O.

PURINGTON PAVERS

ARE MADE OF

GALESBURG
SHALE

The Purington Paving Brick Co.

GALESBURG, ILL.

Marion Brick Works
MONTEZUMA, IND.

MARION PAVERS

A Strictly High Class Paving Block

Also:
- Fancy Face
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- Antiques, Etc.

Terre Haute Vitrified Brick Co.

MANUFACTURERS OF

High Grade Vitrified

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Samples Free

Address TERRE HAUTE VITRIFIED BRICK CO.
Arcade Building, Terre Haute, Ind.

The Danville Brick Company

Manufacturers of

The Unsurpassed Danville Paving Block

DANVILLE, ILL.

LET US QUOTE YOU PRICES

Murphysboro Paving Brick Co.

Manufacturers of

THE CELEBRATED EGYPTIAN PAVING BLOCK

THE BLOCK THAT STANDS THE TEST

Prices and samples furnished upon application

MURPHYSBORO, - ILLINOIS

SHAWMUT VITRIFIED PAVING BRICK WORKS

SHAWMUT, PA. Alfred Yates, Gen. Mgr.

Vitrified Shale and Fire Clay
Paving Bricks and Blocks

Burned in Yates' Patent Kiln

SAMPLES AND PRICES ON APPLICATION

F. L. BARTLETT, Pres. *F. L. STOWELL, Mgr.*

Sterling Brick Company

Manufacturers of

Olean Vitrified Paving Blocks
Dunn Wire-Cut Lug Blocks

OLEAN, N. Y.

The Marion Flue Blower Saves 10% of Your Fuel

It is a permanent fixture in the rear wall of the boiler—opposite center of flue space. By its use the life of the boiler is prolonged by keeping the soot from the tubes.

The Marion works automatically—anyone can install it—anyone can run it.

We sell it with a positive guarantee on thirty days free trial. Want to know about it?

The Marion Machine, Foundry & Supply Co.

P. O. Box 395 Marion, Ind.

Vitrified Shale Paving Blocks, Fire Clay Paving Blocks, Dunn Wire-Cut-Lug Blocks.

Paterson Clay Products Co.
Clearfield, Pennsylvania

PERFORATED METAL SCREENS

As required for BRICK MAKERS USES.

PERFORATED SHEET METALS OF EVERY DESCRIPTION
HENDRICK MANUFACTURING CO
CARBONDALE PENNA.

New York Office
Room 1028 Cortlandt Building

Manufactured by

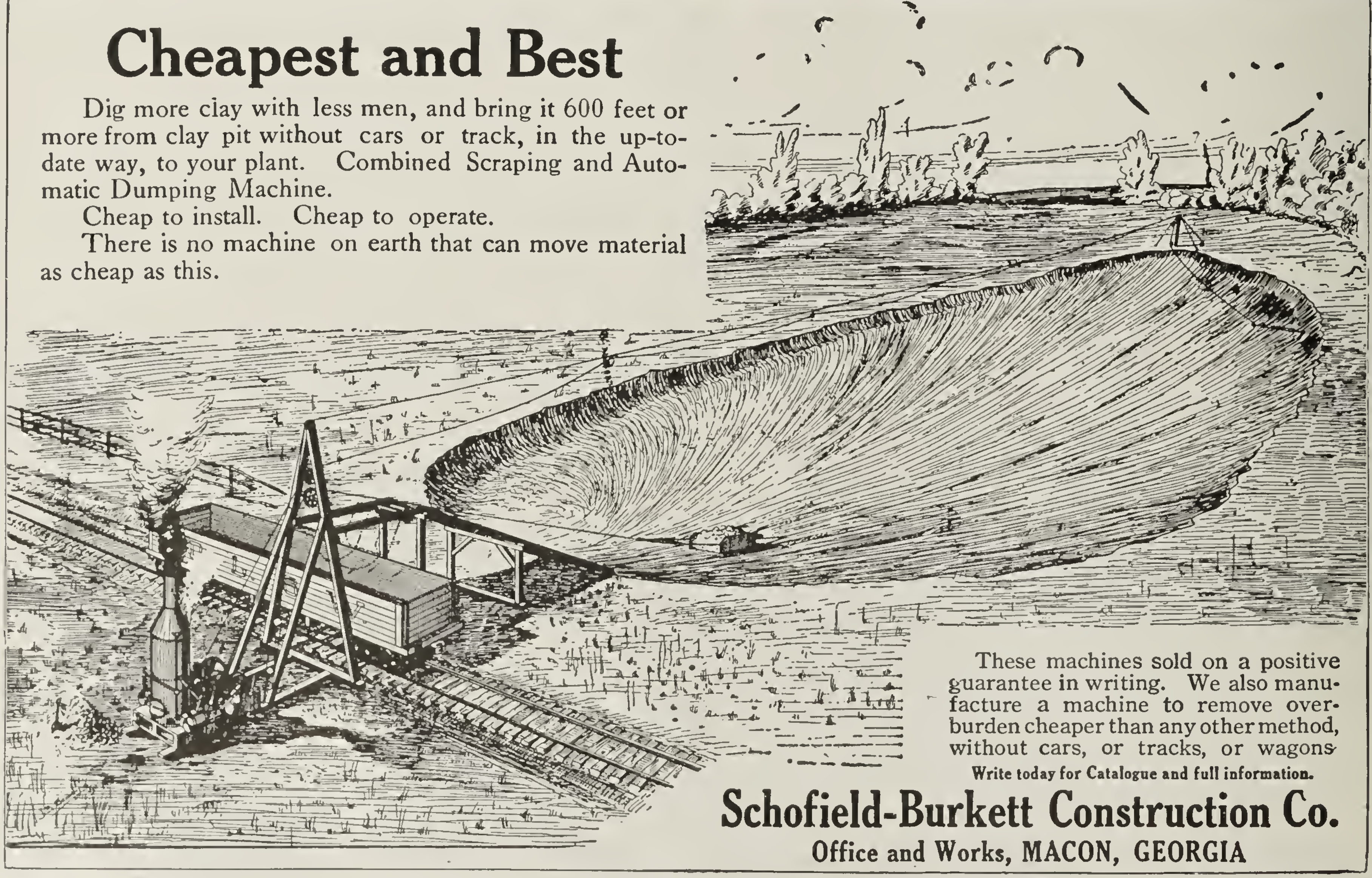
HENDRICK MFG. CO.
CARBONDALE, PA.

Cheapest and Best

Dig more clay with less men, and bring it 600 feet or more from clay pit without cars or track, in the up-to-date way, to your plant. Combined Scraping and Automatic Dumping Machine.

Cheap to install. Cheap to operate.

There is no machine on earth that can move material as cheap as this.



These machines sold on a positive guarantee in writing. We also manufacture a machine to remove overburden cheaper than any other method, without cars, or tracks, or wagons.

Write today for Catalogue and full information.

Schofield-Burkett Construction Co.
Office and Works, MACON, GEORGIA

Iowa Clay Products

Iowa is the GREATEST CLAY TILE MANUFACTURING STATE IN THE UNION. Its clay plants are MODERN and FULLY ADEQUATE in capacity to provide for a MUCH GREATER DEMAND THAN HAS EVER BEEN EXPERIENCED.

This Appeal is addressed to the Established Producer. It is intended to call his attention to the fact that he should become a part of a

GREAT SELLING ORGANIZATION

with the idea of securing a better price for his product through increased demand. Modern selling ideas are based on scientific principles.

EDUCATION OF THE CONSUMER

is the foundation, and the foundation is constructed on a rock bed when undertaken through

AN ASSOCIATION

properly organized to safeguard the interests of the industry. Through Associations a GREAT WORK is accomplished at a SMALL COST to the individual.

JOIN NOW

in the "Get-together" Iowa movement. Every concern's help is essential. A **rousing** association meeting of Iowa Manufacturers of Clay Products will be held in Des Moines on January 22 and 23. Every clay manufacturer, large and small, should be represented and everybody come prepared to BOOST clay products.

If you are an Iowa Clay Products Manufacturer you are selling your ware 15 to 20 per cent cheaper than you KNOW YOU SHOULD. The remedy lies with YOU entirely. Let's talk it over. There is a way out that is a glorious way. Be sure and attend the next Annual Convention. It will pay you. Write today to the secretary saying you will attend.

Iowa Brick & Tile Association

Van Meter, Iowa

The Sawyer as a Conveyor Belt

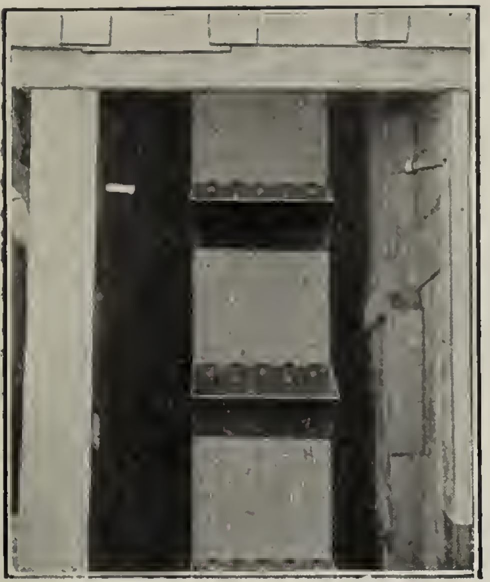
Conveying material by means of belts is the most practical method of handling clay, sand, crushed stone, etc. The finished product is also economically managed in the same way.

The *right* belt for the work must be decided upon by the individual, but in the case of the Brickmen, there is but one—Sawyer Canvas Stitched. The above shows how one manufacturer utilizes SAWYER.

Write for our Book Stunts which shows many others in actual use.

Sawyer Belting Company

Cleveland, Ohio



Excellent Service as Tailing Elevator Belt

Read This

Gandy Belting Co., April 17, 1912.
Gentlemen:—
I am using 142 ft. of 16x8 Gandy Belt in my tailing elevator, installed April 15, 1911, and from present appearances expect it to last for some time yet. This is considered excellent service in this district.
Yours truly,
T. B. Cooper, Supt.
Joplin-Kentucky Zinc Co., Inc.

You may not have a belt running in a tailing elevator, but the reason we cite this case is that, as

THE GANDY BELT

has proven so successful here on one of the hardest drives known, there is no doubt it will handle the work

IN BRICK YARDS
most economically.

Remember, the Gandy Belt costs only one third as much as leather and much less than rubber, yet will do the work equally as well.
Simply drop us a postal for samples and prices now. It will pay you.

Gandy Belting Company, 732 W. Pratt Street, Baltimore, Md.
New York Office: 88-90 Reade Street

Rexall

DOUBLE STITCHED BELTING

50% Superior Construction plus 50% Superior Quality equals **100% SUPERIOR EFFICIENCY.**

That's the way it will work out if you discard rubber and ordinary canvas belting, made the same as it was 50 years ago, and try "REXALL."

A scientifically constructed belt, with a special filler (which does not get hard) especially suited to severe service in clay plants.

1. The plies cannot separate.
2. The edges will not ravel.
3. Bucket bolts will not pull out.
4. Double the life of ordinary belting.

There's a good reason WHY in each case—Let us send a sample and explain before you buy.

Imperial Belting Co.
Everything in Belting
Chicago

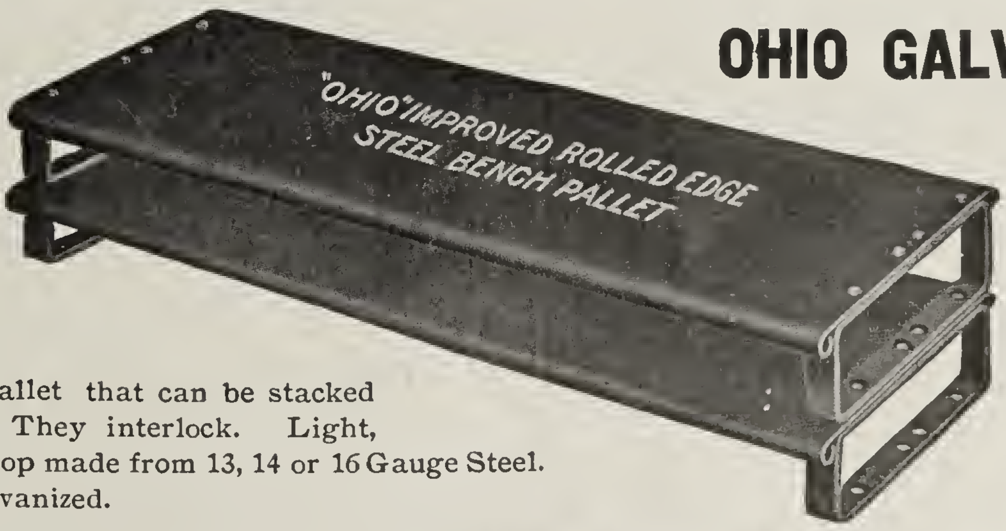
"NESTOR"

SOLID WOVEN
WATERPROOF
BELTING

**BUILT
especially for
BRICK PLANT WORK**

*WRITE FOR SAMPLE AND PIRCE
KINDLY MENTION THIS PAPER*

THE AMERICAN FABRIC BELTING CO.
CLEVELAND, OHIO



**OHIO GALVANIZING
& MFG. CO.**
NILES, OHIO

Style No. 4
(Patented)

The only Steel Bench Pallet that can be stacked without slipping. They interlock. Light, strong and rigid. Top made from 13, 14 or 16 Gauge Steel. Either Black or Galvanized.

Write Us for list and discount on

Sawyers' Red Canvas Stitched Belt

The best belting made for Conveyors and Driving. We sell Rubber Belting, Packing, Hose and everything else in the rubber line. We are the sole distributors of "Sawyers" in Chicago. What do you wish prices on?

Chicago Rubber Co. 218 W. Madison St. Chicago

TO PREVENT SCUM APPEARING ON YOUR BRICK, TERRA COTTA, ETC., USE

R. H. Precipitated
Carbonate of Barytes

LITERATURE ON APPLICATION

OTHER HIGH GRADE CHEMICALS FOR CLAY INDUSTRIES

The Roessler & Hasslacher Chemical Company
100 William Street, New York

Write for our latest Brick Machinery and Supply Catalogue

The Wellington Machine Co., Wellington, Ohio,
or JAMES W. HENSLEY, Indianapolis, Ind.

J-M Asbestos and Magnesia Products

Asbestos Roofing
High Pressure Pipe Covering
Permanite Sheet Packing
Kearsarge Gaskets
High Temperature Cement
Sea Rings for Piston Rods
Brake Lining
Fire Extinguishers, etc

Write for Catalog

H. W. JOHNS-MANVILLE CO.
New York and every large city

TRADE MARK
Tapestry Brick
REGISTERED IN U.S. PATENT OFFICE

All persons are NOTIFIED against INFRINGEMENT
FISKE & COMPANY, Inc., Boston New York

Attention! Mr. Clayworker,

Read Page 38 of this issue.
It will interest **you.**

HOW TO ANALYZE CLAY

A Practical Work for Practical Men

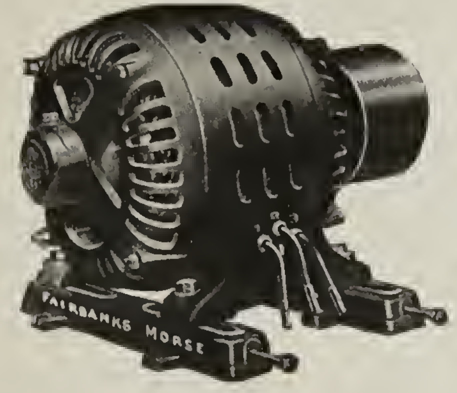
An aid to beginners and full instructions for making clay analysis

64 Pages with Illustrations
By HOLDEM M. ASHBY

PRICE
$1.00
POSTPAID

"BRICK AND CLAY RECORD"
445 PLYMOUTH COURT, CHICAGO

The Motors With the Pull



Fairbanks-Morse Induction Motors

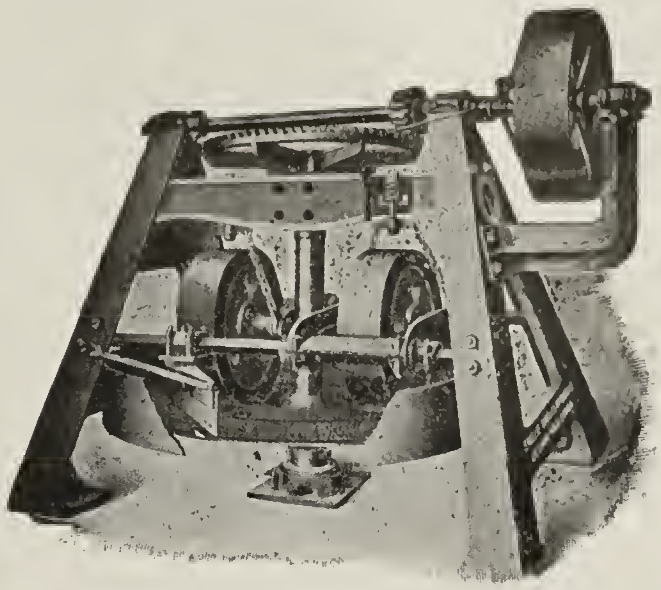
deliver their full horse power rating *easily*, giving them plenty of reserve power for emergencies. Extra heavy insulation is a feature of construction that adds greatly to their length of service under hard conditions.

Catalog No. 1243GJ describes these motors fully. Shows why they are better. Write for copy.

Fairbanks, Morse & Co.
900 S. Wabash Ave., Chicago, Illinois

Manufacturers of Kerosene, Gas and Gasoline Engines, Dynamos and Motors, Steam and Electrically Driven Pumps, etc.

The "Eagle" Dry Pan



With independent and suspended mullers, has more

Distinctive Points of Merit

than any other Pan on the market.

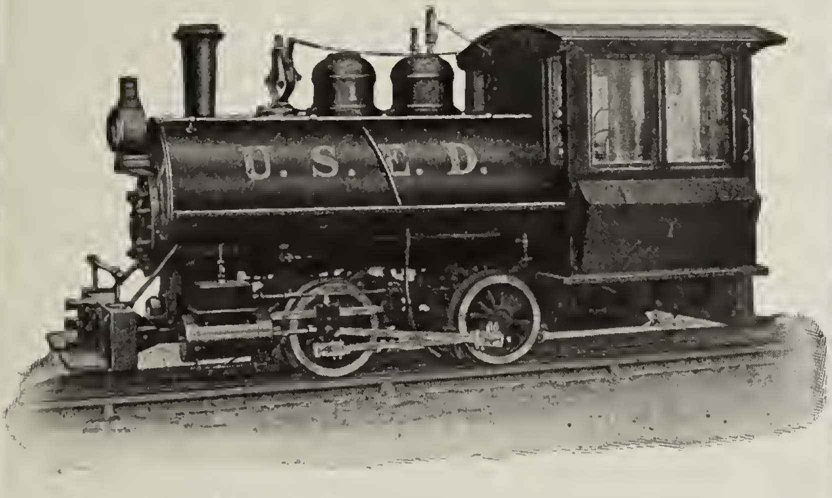
DESCRIPTIVE CATALOGUE ON REQUEST

EAGLE IRON WORKS, Builders
DES MOINES, IOWA

CLAY HAULAGE

Reduce costs of transportation by using a

Davenport Industrial Locomotive



Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers, for hauling clay or shale from pits or mines to plant.

Cheaper Than Horse Transportation

and will reduce costs of delivering your material to your plant, thus increasing profits.

All About Modern Industrial Railways

Write us for particulars

Davenport Locomotive Works
Davenport, Iowa

BRANCH OFFICES: St. Louis: 654 Pierce Bldg.
Chicago: 12 and 14 So. Canal St.
St. Paul, 1308 Pioneer-Press Bldg.
Seattle: 617 Western Ave.
New York City, 30 Church St.
Canadian Representative: F. H. Hopkins & Co., Montreal, Que.

Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.

We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

The Chase Foundry & Mfg. Co., Columbus, O.

Don't Strain and Tug

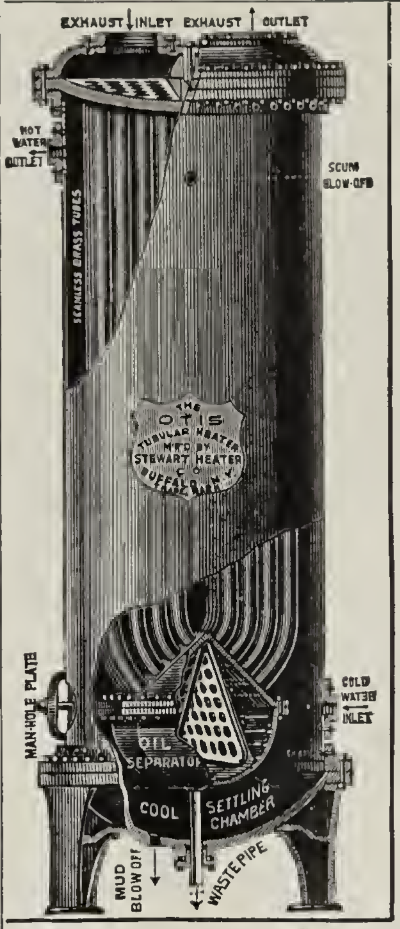
The day is past for any clayworker to break his back trying to turn old fashioned turntables. Don't waste time and energy with a table that balks and has to be moved with a crow bar or a blast of dynamite.

Use "Universal" Turntables.

They run on a serpentine track with ball-bearings. They cannot clog up—they turn seventy-five per cent easier than others—they are self-oiling and dirt proof, and they never get out of order.

We'll tell you prices if you'll send the wheel base of your cars and the gauge of your track. Ask for the "GRAY BOOKLET" at least.

Canton Foundry & Machine Co.
Canton, Ohio



THE OTIS

Tubular Feed Water Heater, Oil Separator and Purifier

is not an experiment but a tried and trusted appliance that the makers are not afraid to

GUARANTEE

To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust,* so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator.*

We are so sure of the OTIS that we agree to pay all cost of a trial—freight, cartage, piping, etc.—if it fails to do all we claim for it.

Catalogue and Prices at Your Service

The Stewart Heater Company,
33 EAST DELEVAN AVENUE · BUFFALO, N. Y.

IT will be worth your while to investigate the merits of our line of dryer cars.

Glance at the cut and note the lines and construction of our new triple deck car with folding decks. This car will give the best possible service under the most trying conditions, never sagging or failing at critical times.

The folding deck feature is also a decided improvement over the old style deck.

If you want value received for every dollar's worth of outlay simply write for our prices and catalogue.

ELECTRIC LOCOMOTIVE & CAR CO.
Successor to
The Industrial Car Co. *and* **The Cleveland Car Co., West Park, Ohio**

We All Want the Same Thing; Let's Go After It Together and Get a Double Load.

¶The one thing that every brick manufacturer needs more than any other thing is —A Demand for Brick. His business depends upon it.

¶Ohio is now experiencing the greatest building boom in its history. In city and country there is an unusual number of operations and every indication for the future suggests for Ohio and the entire Middle West their greatest building extension.

¶Wood, cement or Brick will be used in every building erected. Because you know that Brick is best does not relieve you from the duty of telling those who are to build, about it.

¶The lumber people and cement interests are alive and each is making a concentrated effort to create a demand for its goods. A well organized effort back of an inferior article will put it ahead of a superior material only half promoted.

¶It is up to the Brick Manufacturers of Ohio to get their share of the millions that will be spent for construction material. The demand for the material exists and if we pull together we can turn that demand toward our product.

¶We have, to sell, a material that **always makes good.** We have the only absolutely indestructible building material, and in the arguments for beauty of construction, fireproofness and economy of use we have every other product backed from the boards.

¶Let's beat these facts into the minds of those who are back of the building operations.

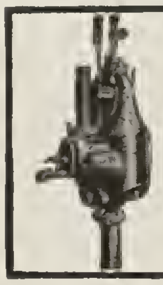
¶That is the mission of our organization—to create a demand for Face Brick. It is the old idea of the strength of united effort. A team can pull a bigger load than two horses hitched singly, you know. Hook up with the team now and we will get for our product—Brick—the attention deserved by the best building material in the world.

¶We will be glad to lay all our plans before you if you will let us know that you are interested. It is not a **Speculation** on your part to join this organization; it's an **Investment.**

Ohio Face Brick Manufacturers Association

F. H. Chapin, President CLEVELAND, O. **R. L. Queisser, Secretary**

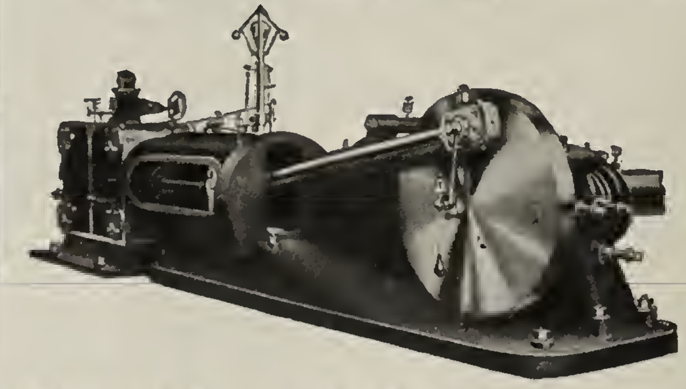
"STAG" BRAND
Manganese Steel Castings
EDGAR ALLEN AMERICAN MANGANESE STEEL CO.
Chicago, Ill., New Castle, Del.



PULSOMETERS

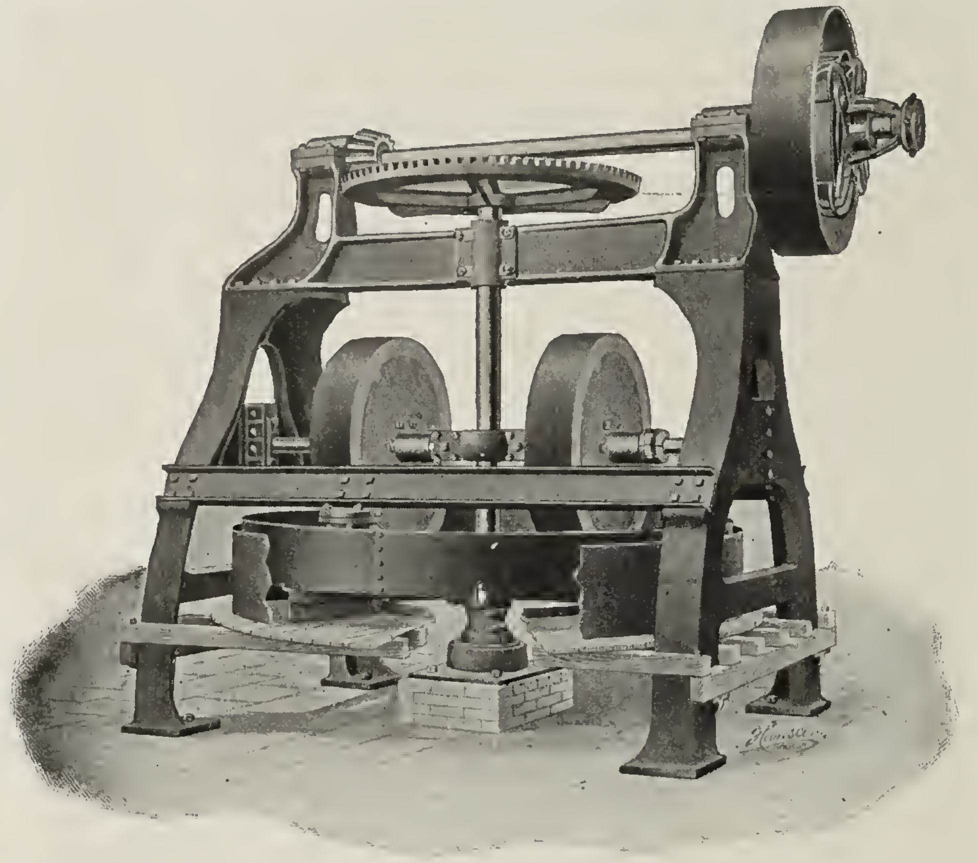
Cost less to purchase, install and operate than any other type of brickyard pump. They handle gritty water and never need lubrication.
Write today for our "Pulsometer Handbook." It shows many novel installations and contains valuable data on pumping problems.
PULSOMETER STEAM PUMP CO., 13 Battery Place, New York, N. Y.
Chicago Office: 223-231 North Jefferson Street

POWER PLANTS COMPLETE
CORLISS ENGINES, WATER-TUBE AND TUBULAR BOILERS



Send for Catalogue No. 65-B

Murray Iron Works Co. Incorporated Feb. 1, 1870
BURLINGTON, IOWA



9-Ft. Cast Iron Frame Dry Pan

THE oldest established sewer pipe machinery manufacturers in the United States

First to make a solid socket Die.

Presses
Dies
Pans (Dry and Wet)
Mills (Chaser and Combination)
Elevators
Feeders
Screens

Complete Equipment

The Turner Vaughn & Taylor Co.
Cuyahoga Falls, Ohio, U. S. A.

Modern Brickmaking
By A. B. SEARLE

440 Pages 260 Illustrations $5.00 Post Free

THE NEWEST and BEST OF ALL CLAYWORKING BOOKS prepared by a famous authority in clay products manufacture, qualified to give the trade the latest and best information regarding clayworking processes.

"BRICK AND CLAY RECORD"
445 Plymouth Court, Chicago

ONE MAN AND A MARION CAN MOVE THE EARTH

the quickest, the best, the cheapest way. Built in every size and style. Thousands are using them to dig their clay. Are you one of them?

Write for folder "PICTURE TALKS."

THE MARION STEAM SHOVEL COMPANY, MARION, OHIO, U. S. A.

Advertisements in "BRICK AND CLAY RECORD" are indexed. Turn to page 4.

WATCH THE BUCYRUS DIG!

70C Bucyrus Shovel—2½ Yd. Dipper—Swedeland Slag Co.—Swedeland, Pa.

ALL SIZES OF SHOVELS FOR

Clay Plants

Revolving Shovels

in the following sizes:

14B— ⅝ yd. Dipper
18B— ⅞ yd. Dipper
25B—1 yd. Dipper
32B—1¼ yd. Dipper

We also build Shovels of All Sizes, Drag Line Excavators, Dredges, Unloading Plows, Railway Cranes and Locomotive Pile Drivers.

BUCYRUS COMPANY,
P. O. Box A,
SOUTH MILWAUKEE, WIS.

CHICAGO, McCormick Bldg.
NEW YORK, 50 Church St.
BIRMINGHAM, Brown-Marx Bldg.
DULUTH, Alworth Bldg.

SAN FRANCISCO, N. B. Livermore & Co.
DENVER, H. N. Steinbarger
SEATTLE and PORTLAND, Northern Equipment Co.
MONTREAL, Mussens, Ltd.
LONDON, Geo. F. West & Co.
CITY OF MEXICO, Smith & Wiggin
PARIS, Hart. O. Berg

Handle Your Clay With One Man and

The Thew Steam Shovel

TYPE No. 1 SHOVEL

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The dipper is hung from a horizontally moving carriage and can be adjusted to any desired level.

Only One Operator Required. Wire Cables used instead of Chains. Strictly First-class in Every Detail. Made in Five Sizes. Mounted on Car Wheels or Traction Wheels. : : : : :

Economical for brickyards 30,000 or more daily capacity.

Operated by one man for outputs up to 125,000 bricks per day.

Write us for Catalogue and Information

The Thew Automatic Shovel Co., LORAIN, OHIO

The "Martin" **BRICK MACHINERY**

Modern **YARD SUPPLIES**

Soft-Mud or Stiff-Mud Processes

Get Our Plans

Dry or Wet Grinding Pans

Barrows and Trucks

Disintegrators

Clay Cars--Dryer Cars

Hoisting Drums

The Henry Martin Brick Machine Mfg. Co.

GET MARTIN PRICE LIST

LANCASTER
PENNA.
U. S. A.

GET OUR BIG CATALOG

SCHULTZ EQUIPMENT

For Brick, Tile and Terra Cotta Plants

We make a specialty of designing and furnishing complete machinery equipment for all kinds of clay-working plants, including expert engineering service in supervising erection and installation.

Double Pug Mill equipment, especially designed for the perfect preparation of material in the manufacture of terra cotta.

SCHULTZ HEAVY DUTY FRICTION CLUTCH

suitable for all purposes. If you are having clutch trouble, write to us and we will show you the way out of your difficulties.

Complete brick plants furnished promptly, including auger machines, pug mills, clay cars and granulator shafts.

Cutting and cut steel gears always in stock for brick machines, also granulator knives.

Remember, we are brick works engineers and will be glad to advise you regarding any improvements or repairs which you contemplate.

A. L. SCHULTZ & SON, 1675 Elston Ave., Chicago

American System Sandstone Brick Machinery

JACKSON & CHURCH CO.

321 N. Hamilton Street SAGINAW, MICH.

Designers and Builders of

SAND LIME BRICK PLANTS

Beet Pulp Dryers and Presses, Dredging, Mining and Hoisting Machinery Boilers, Tanks, Light and Heavy Forgings and Castings, etc., etc.

TORONTO BRICK CO., LIMITED, TORONTO, ONT.—44,000 PER DAY CAPACITY

The Toronto Brick Co., Ltd., write under date of Oct. 12th, 1912—

"On Sept. 30th we closed our year, and in starting on the new, would say that the two presses have been running continuously since they were purchased of you. Last year we made ten million brick and would have made more had we not closed down some time to install wet pans. The presses still are in as good condition as when installed seven years ago, and the record they have made is astonishing when compared to what other plants are doing. Our repairs last year were 15c per M, and we are so pleased with the results that you are at liberty to make use of this letter."

Are You Supporting It?

Are you showing PRACTICAL interest in this great publicity work which is BOOSTING Clay Products so that the people —the buying public, will know of the superiority of these products over all other materials, and that YOU may GET THE OPPORTUNITY TO SELL what you are manufacturing?

You may be INTERESTED in what the OTHER fellow is doing and you may be INTERESTED in REAPING the benefit CREATED by the OTHER fellow, but that IS NOT A PRACTICAL INTEREST.

If you want to show a PRACTICAL INTEREST you must take an active part in the Second Annual Show which is to be held Feb. 28 to March 8, 1913, and this means that you must become an EXHIBITOR—that you must DISPLAY YOUR manufactured products at this show, and thus HELP the other fellow in BOOSTING Clay Products as a whole.

If you haven't thought about becoming an exhibitor this year, do so now. Write a letter to Secretary Hopley TODAY and ask him to reserve you space and tell him to send you full particulars so that you can begin at once to prepare your exhibition and make it not only creditable to you but to the clay products industry. Here is his address:

The Clay Products Exposition Co.

815 Chamber of Commerce Building
CHICAGO

This is the Machine That Makes the Profits

It was built to make just two things—brick and money, and it goes about its work with consistency—with uniform deliberateness and never-disappointing regularity.

It was built to give the most service—in the least time and at the lowest cost for power and labor of any machine man has invented, and it does it.

The "New Haven"

This is the machine that has made the records in soft-mud brick manufacture.

This is the machine that has proven a dividend-maker on every yard installed.

This is the machine that has never been replaced by another make.

This is the machine that leads all in durability, in uniformity of work, in capacity.

This is the machine that costs less to operate—less for repairs—less for power.

This is the machine that runs while the other kind is tieing up the plant.

It Uses Soft Mud

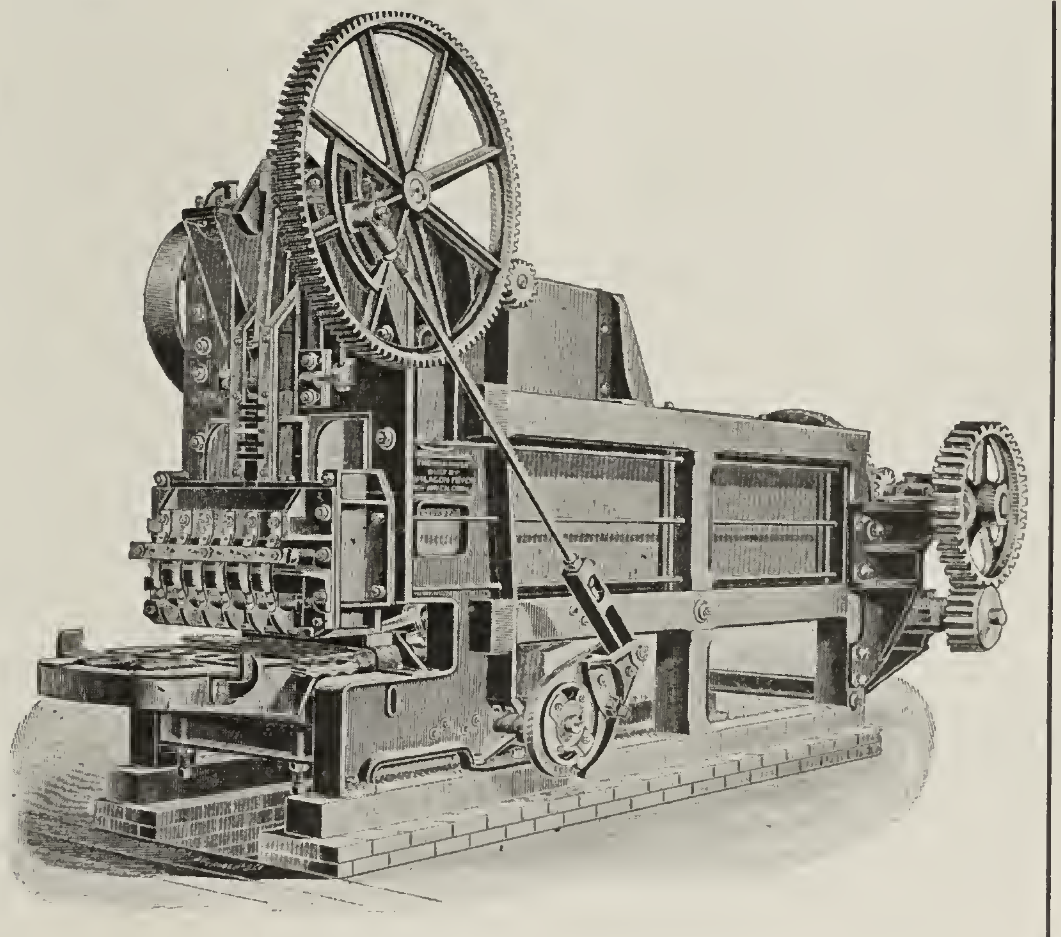
And it does it intelligently—eliminates lamination—delivers a finished product—doubles the profits—and forevermore ends brick yard troubles.

The "New Haven" Machine

Costs more to buy—less to operate. That's where the cheapness comes in. You spend your money when you BUY—that saves spending it every day in repairs—in inferior production—in small capacity.

And yet the initial cost is only slightly higher than the "cheaper" machine, but the profits are many times greater.

If you are interested in profit-making brick we suggest that you lose no time in writing us for complete description of this machine. Every day you hesitate is costing you dollars in lost dividends.



THE MACHINE THAT MAKES THE PROFITS

TEAR OUT THIS COUPON. MAIL IT TODAY

THE EASTERN MACHINERY COMPANY
New Haven, Conn.

Please send me full information about the "New Haven" Machine. I am interested in making as much money out of my product as possible.

(Signed)____________________

(Address)____________________

Brick ____________________

To make the effort of writing as slight as possible we have prepared a special coupon for your use. Fill it out—stick it in an envelope or paste it on a postal card and mail it to us today. This will bring you the most satisfying return you ever received from a letter of inquiry.

The Eastern
Machinery Company
New Haven Connecticut

YES

150,000,000 Block

MADE ANNUALLY BY

The Metropolitan Paving Brick Co., Canton, Ohio

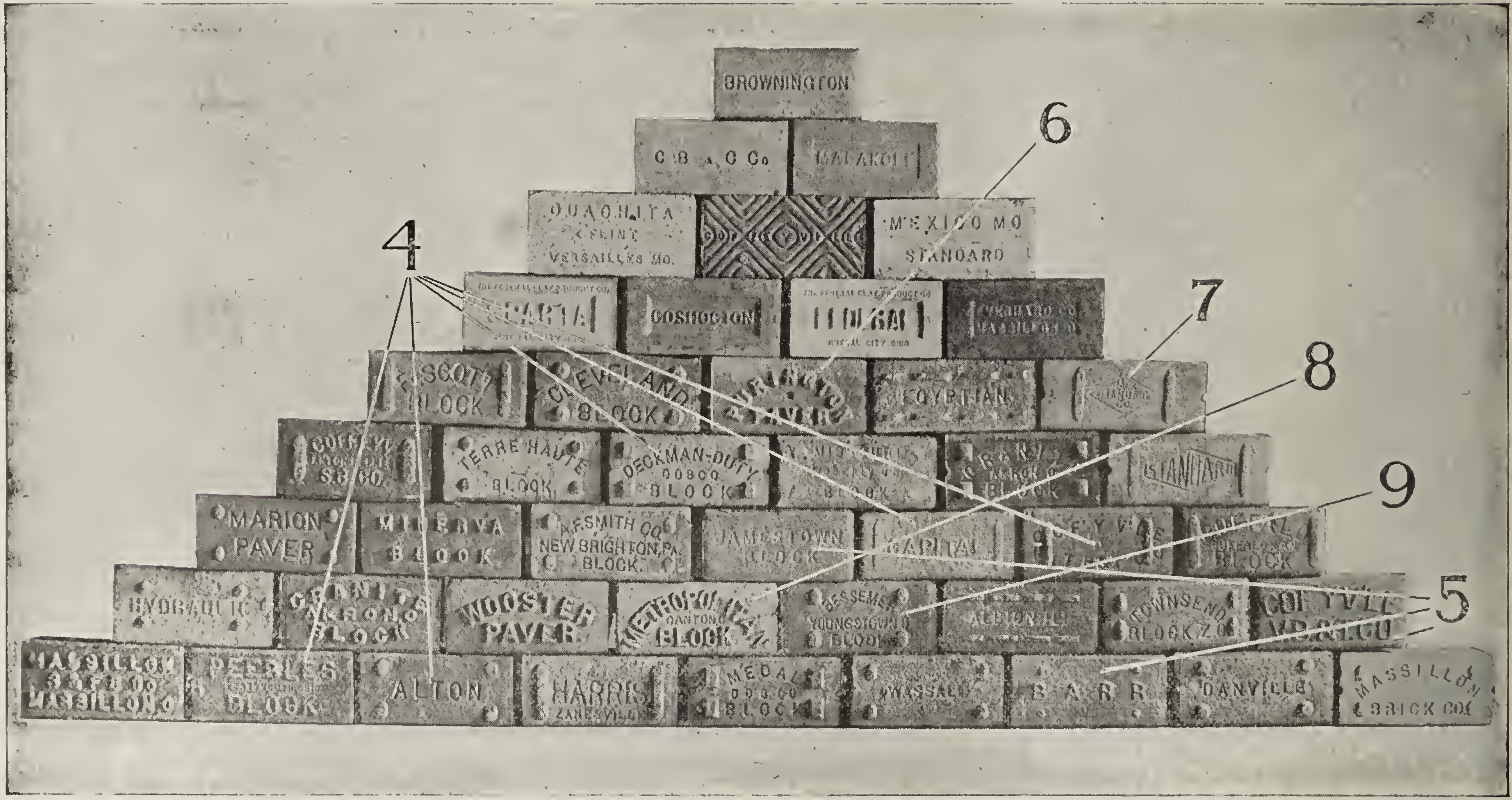
AND

Bessemer Limestone Co., Youngstown, Ohio

are all made on **Bonnot** machinery, and all are **Repressed Block**

17 Bonnot Represses used by the above named concerns

3,000,000 Brick and Block are repressed DAILY on Bonnot Represses



Some Products of the Bonnot Repress

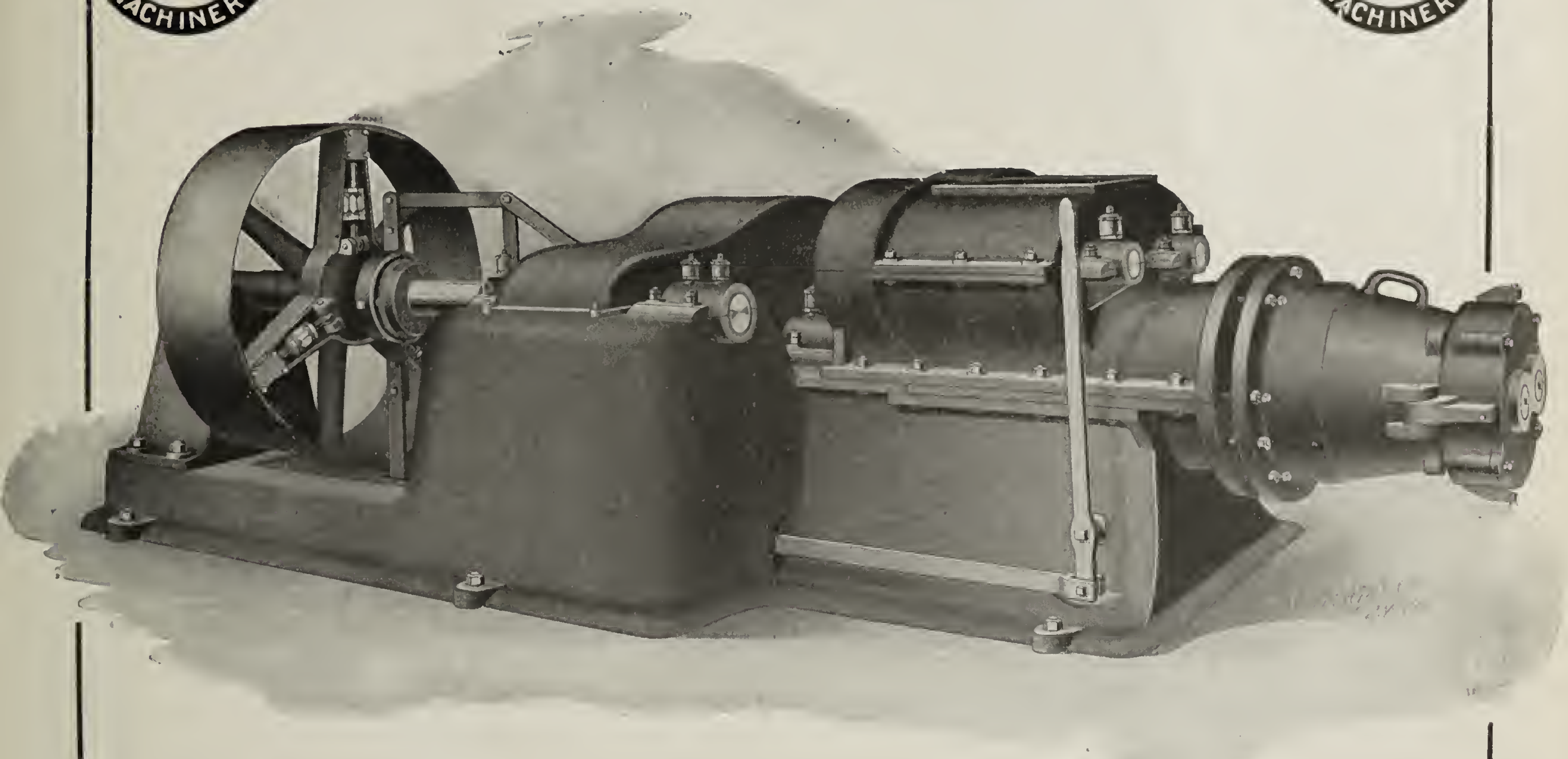
Figures Show Number of Represses Some of These Customers Are Using

THE BONNOT COMPANY

909 N. Y. Life Bldg., KANSAS CITY, MO. CANTON, OHIO

631 Higgins Bldg., LOS ANGELES, CAL.

For Making Tile or Hollow-ware



No. 17 Bonnot Tile Machine Particularly Built For That Work

In this machine you will find the very highest class of construction.

It rests upon a massive one-piece bed plate which gives rigidity to the entire machine. The gears are cut from steel, are fully housed and run in oil.

The marine type of collared thrust bearing is used with an area of about three times that found on other machines. You know the advantage of this on a hollow-ware machine.

Provision is made for adjusting the position of the nozzle to compensate for any wear on the auger. Three sizes of augers can be furnished.

New Catalog Ready December 20th—Write For Your Copy

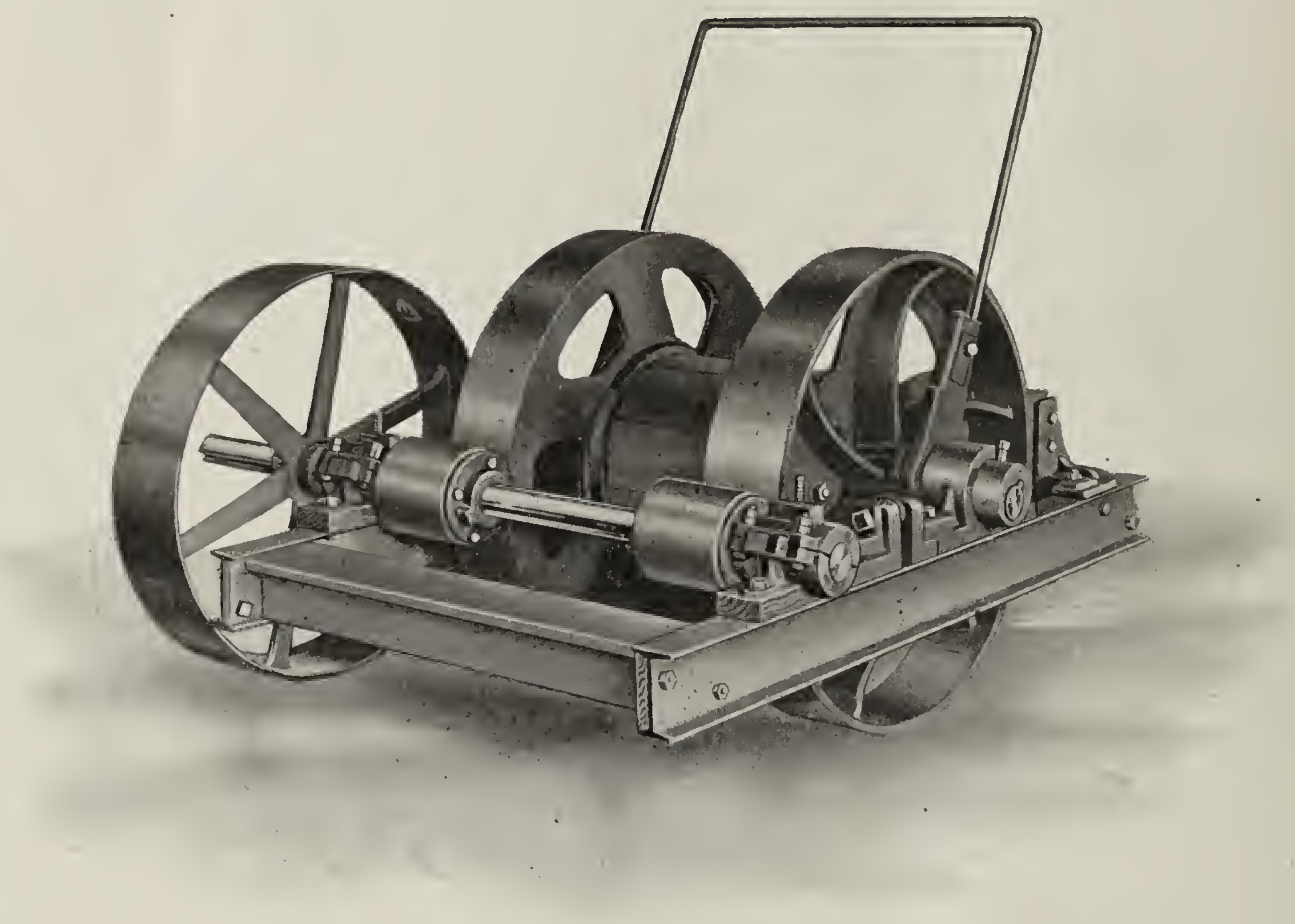
THE BONNOT COMPANY

909 N. Y. Life Bldg.
KANSAS CITY, MO.

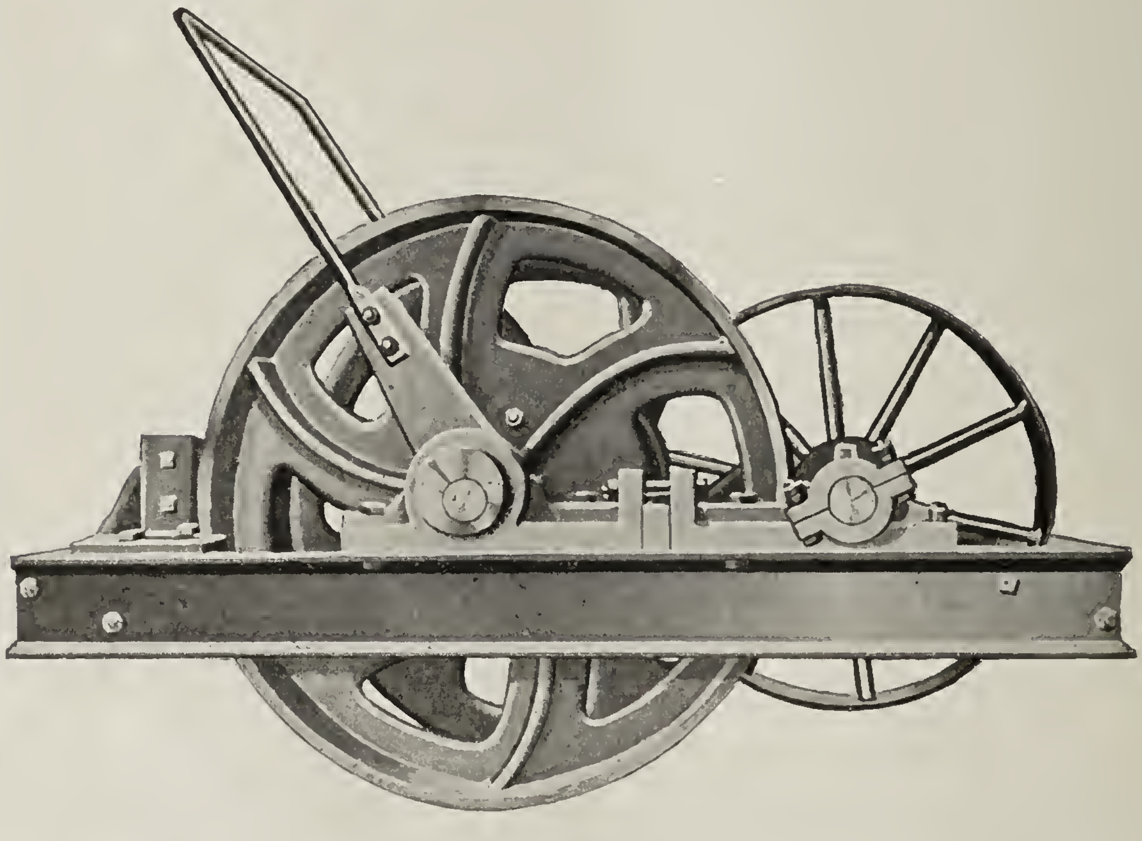
631 Higgins Bldg.
LOS ANGELES, CAL.

CANTON, OHIO

The Steele Double Friction Hoisting Drums

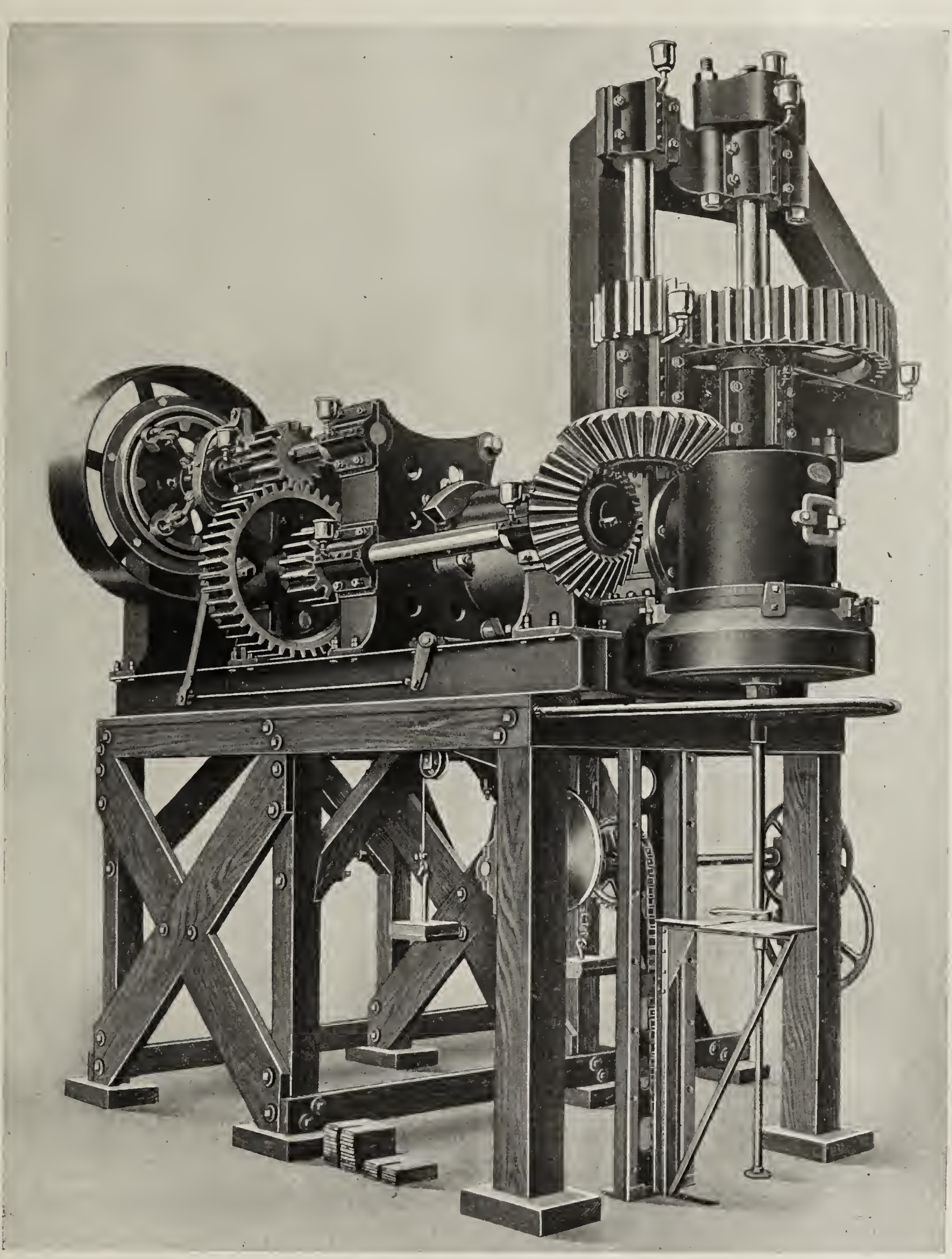


Originally designed by us. Hundreds in use.



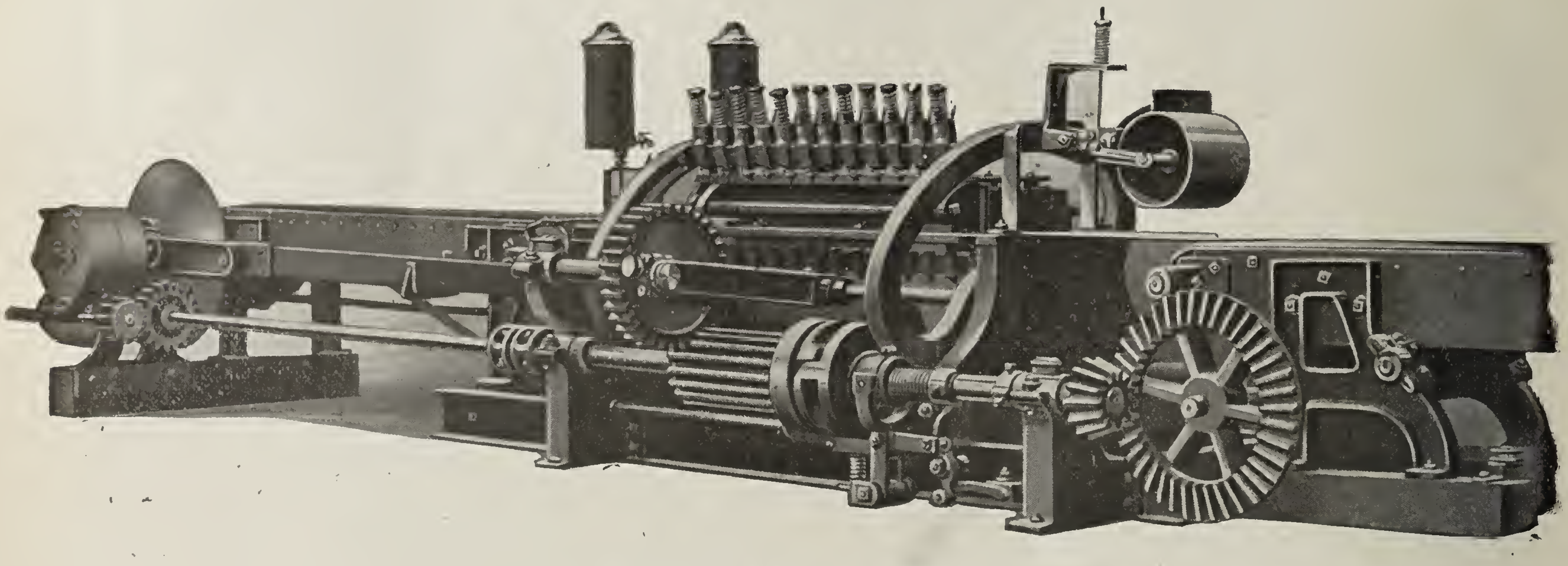
A glance at the cut will show you the great advantage of this design. The bearings are the same on both sides, and the power is applied by eccentric boxes on each end of drum shaft. Both sides are tightened by the same lever. It is readily seen that when the friction is on both sides equally, the bearing is straight with the friction wheels, and the whole friction surface is in contact, giving much more power than when the pressure is brought to bear on a single friction, and not squarely against that. This gives a much greater friction surface. Brakes are applied with same lever as the power, and are capable of holding a heavy load on a steep grade. The boxes are adjustable for taking up wear. Cars can be pulled any angle by putting sheave wheel at head of track. Made in three sizes.

J. C. STEELE & SONS, Statesville, N. C.



Upon the larger sizes of straight pipe the down-delivery machine is more rapid than the steam press, and makes better ware. If interested in a good down-delivery machine, write

H. Brewer & Co. BREWER **Tecumseh, Mich.**



Size 50 Reciprocating Automatic Cutter

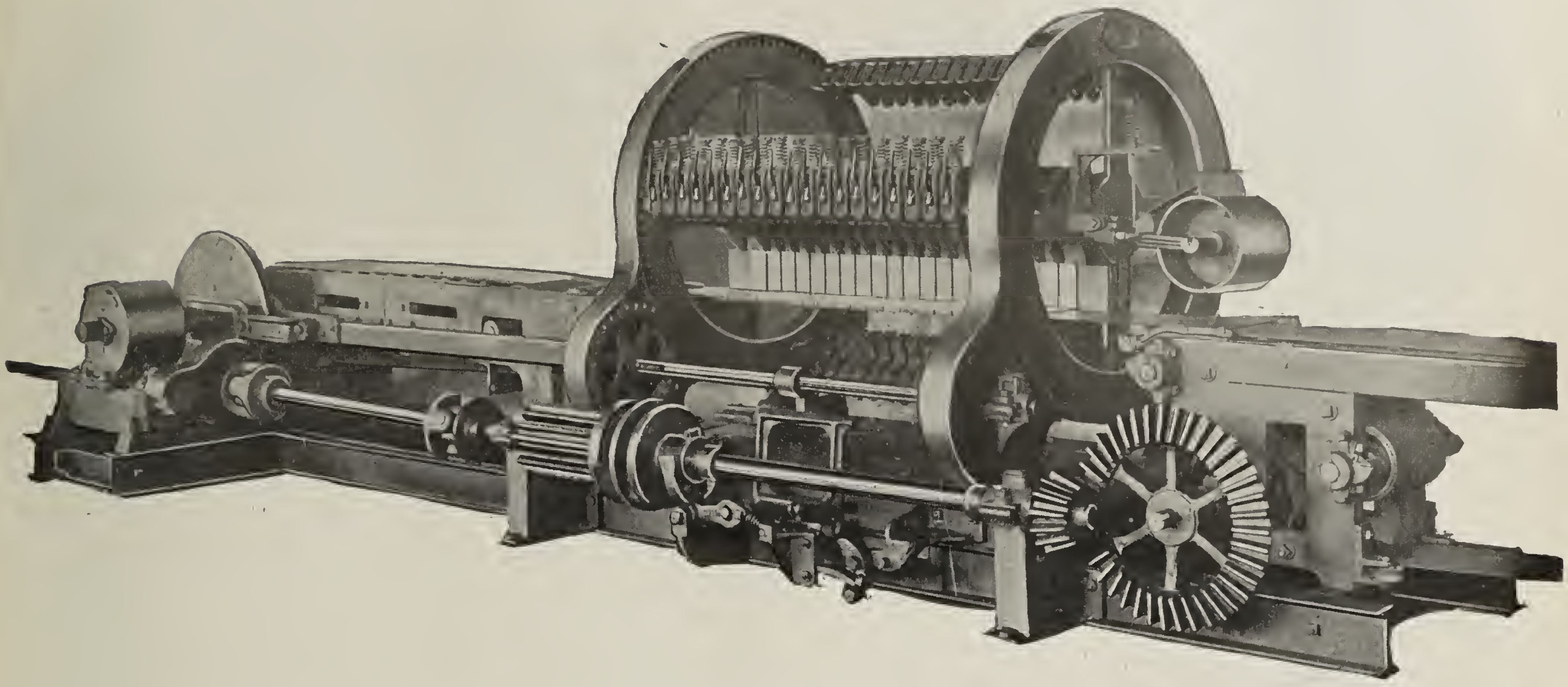
This apparatus, which is of the reciprocating type, is built in two sizes, "50" and "60", for capacities up to 10,000 brick per hour or more. The design is extremely simple. It embodies many of the well tried features of our Rotating Automatic Cutters.

The cutting frame carries only one set of cutting wires and has a swinging movement, avoiding the wear and play common to sliding parts. It is actuated by a crank, giving a smooth, quiet starting and stopping of the cutting stroke. Ample time to renew broken wires while the frame is stationary.

The platens are very easily removed and replaced when the thickness of cut is to be changed. Only 4 bolts to be removed, when the platen can be lifted out. An adjustable upper platen can be furnished to prevent ragging of the upper edges of the brick. This is automatically lifted to clear the clay column after the cut has been completed and is returned to position in time for the next cut, avoiding any tendency for the clay to become wedged.

Either size Cutter is made to suit a variety of work—and can also be especially arranged for cutting the Dunn Wire-cut Lug paving blocks. The Size 60 is built special to accommodate the largest sizes of fireproofing, etc.

E. M. FREESE & CO., Galion, Ohio



Size 20 Rotating Automatic Cutter

We build rotating automatic cutters in various sizes and capacities. They are successfully used for solid brick of ordinary sizes, also for hollow ware, fireproofing, radial chimney blocks, etc., up to 13½"x7½".

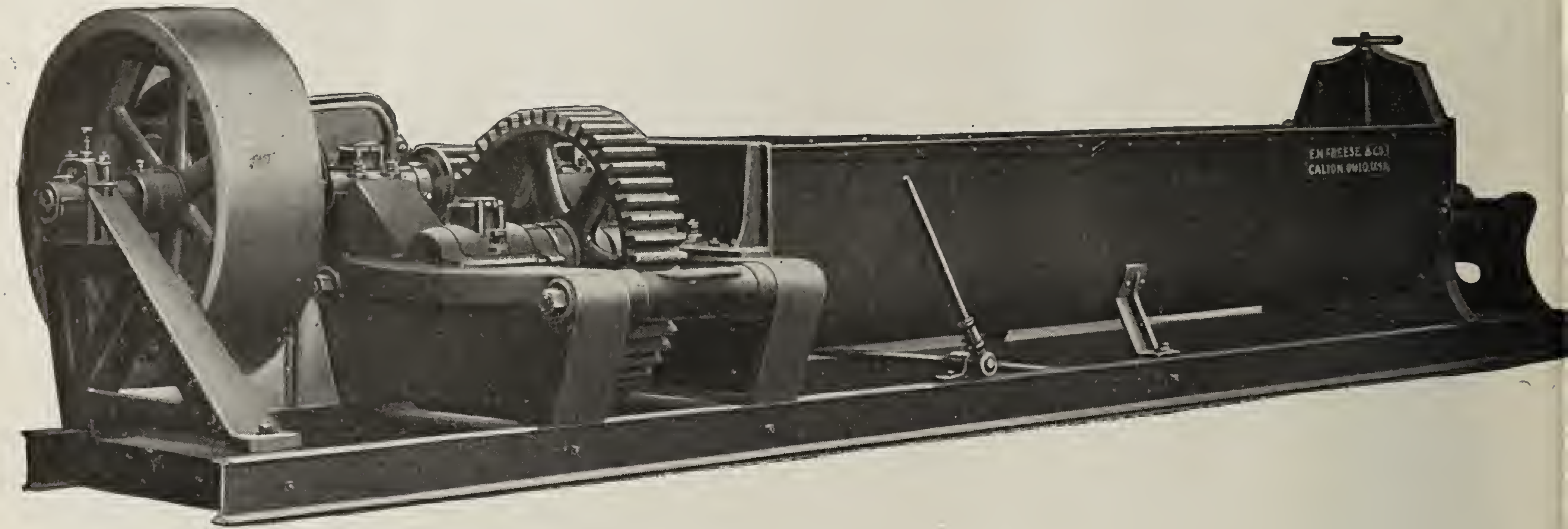
The above illustration shows the Size 20 Cutter, which is an improved model of our well-known Size 16. It is intended for capacities up to 7,500 standard size brick per hour—18 brick are cut at each cut. At this speed the cutting reel makes only a little over two revolutions per minute, remaining stationary between cutting strokes. It is never necessary to stop the brick machine to renew broken wires, as this gives ample time.

The cutting apparatus, including drive for separating belt, is entirely self-contained, being mounted upon one set of I-beam sills, assuring permanent alignment of all parts. The measuring and separating tables are built with iron or steel sides.

Cutting reel and carriage are carried on rollers requiring little or no oiling. Carriage is positively moved with the clay by an accurate cam. Clutch mechanism is the simplest possible. Wearing surfaces have renewable steel plates.

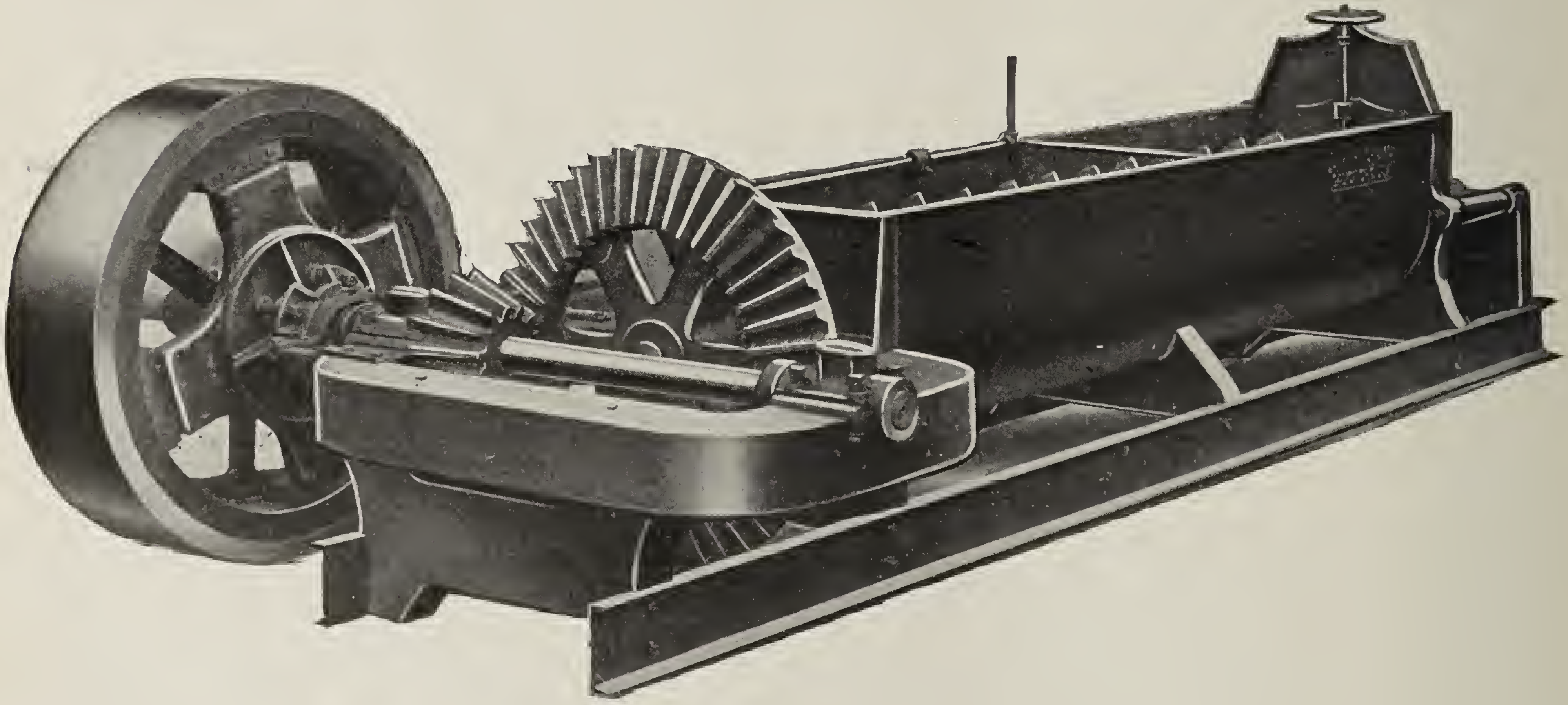
Particular attention is called to the platen construction. The platen is cast in one piece of tubular cross section and is very rigid. Surfaces covered with renewable steel plates, insuring fine slots. The angle of the cutting wires has been changed to give perfect edges on the brick. Built to give long service without skilled attention. Complete description will be furnished on request.

E. M. FREESE & COMPANY, Galion, Ohio



We are building Pug Mills in great variety—more than forty patterns and sizes. The above is an example of a **heavy,** direct-geared machine of large capacity, designed for most exacting requirements.

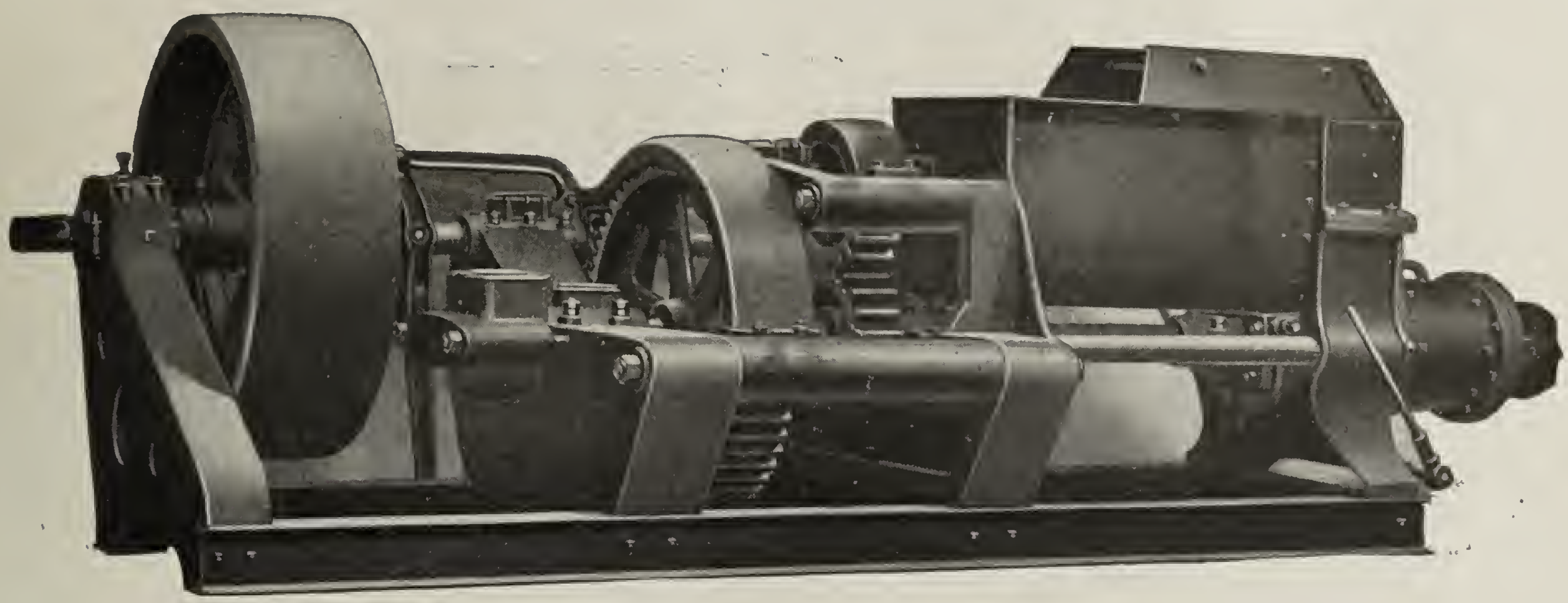
Let us send you particulars



This is an example of a bevel geared Pug Mill built in several sizes. These machines embody many desirable features. We furnish both bevel and spur gear Pug Mills of all sizes, arranged to discharge at either end, as may be specified. We believe we are in position to furnish more value for the price than can be obtained elsewhere.

Write us now

E. M. FREESE & COMPANY, Galion, Ohio



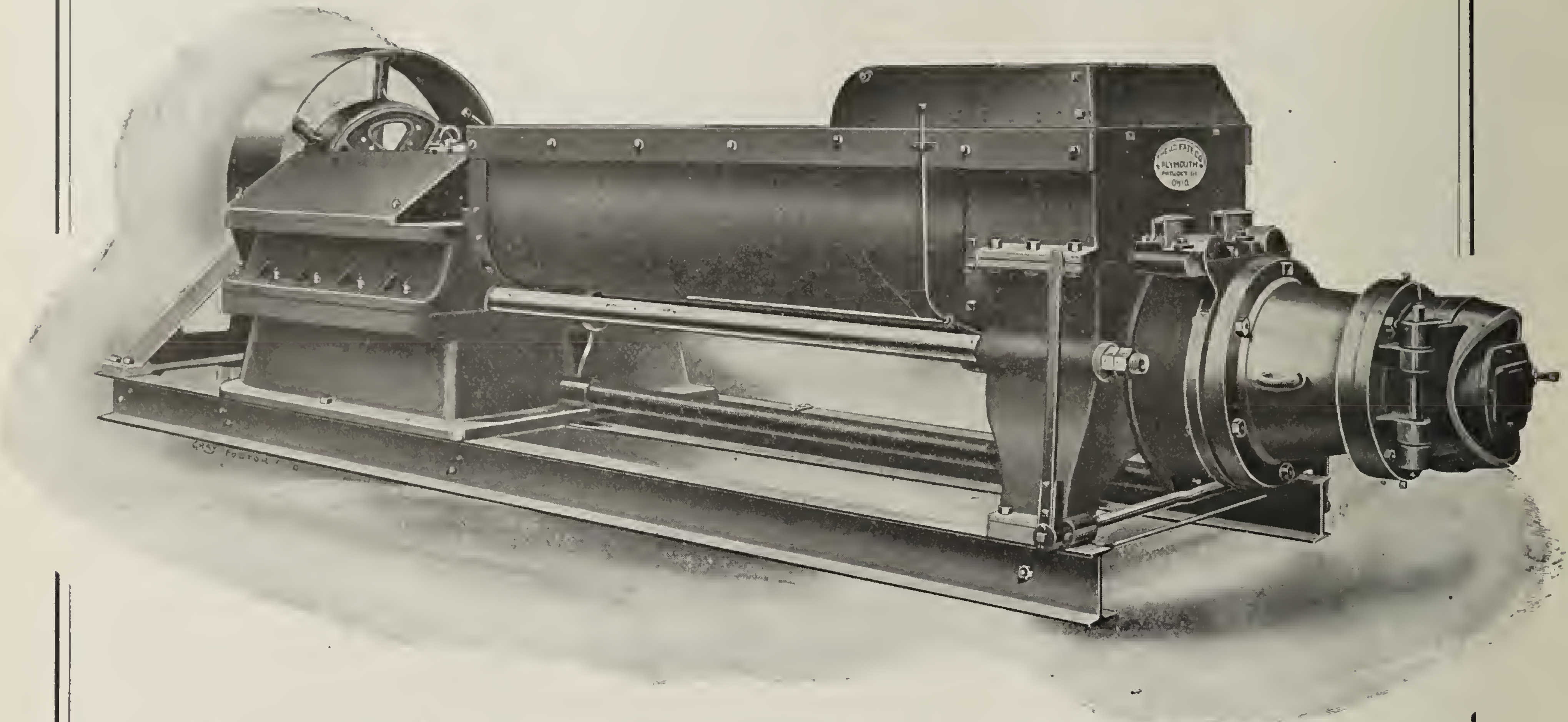
Model "K" Auger Brick Machine

This machine has several features of merit. The construction is simple. The parts conveniently accessible. Each of its three shafts has three journal bearings, insuring substantial support for the gearing and more permanent alignment. The feeding chamber is open its entire length and the auger chamber is kept positively and uniformly supplied with clay. The gearing is designed for smooth and quiet operation. All the shafts are of large diameter and the proportions throughout are extremely heavy. The workmanship and material are of the best.

Intended for first-class product and economical operation.

E. M. FREESE & COMPANY, Galion, Ohio

Special Premier Brick Machine

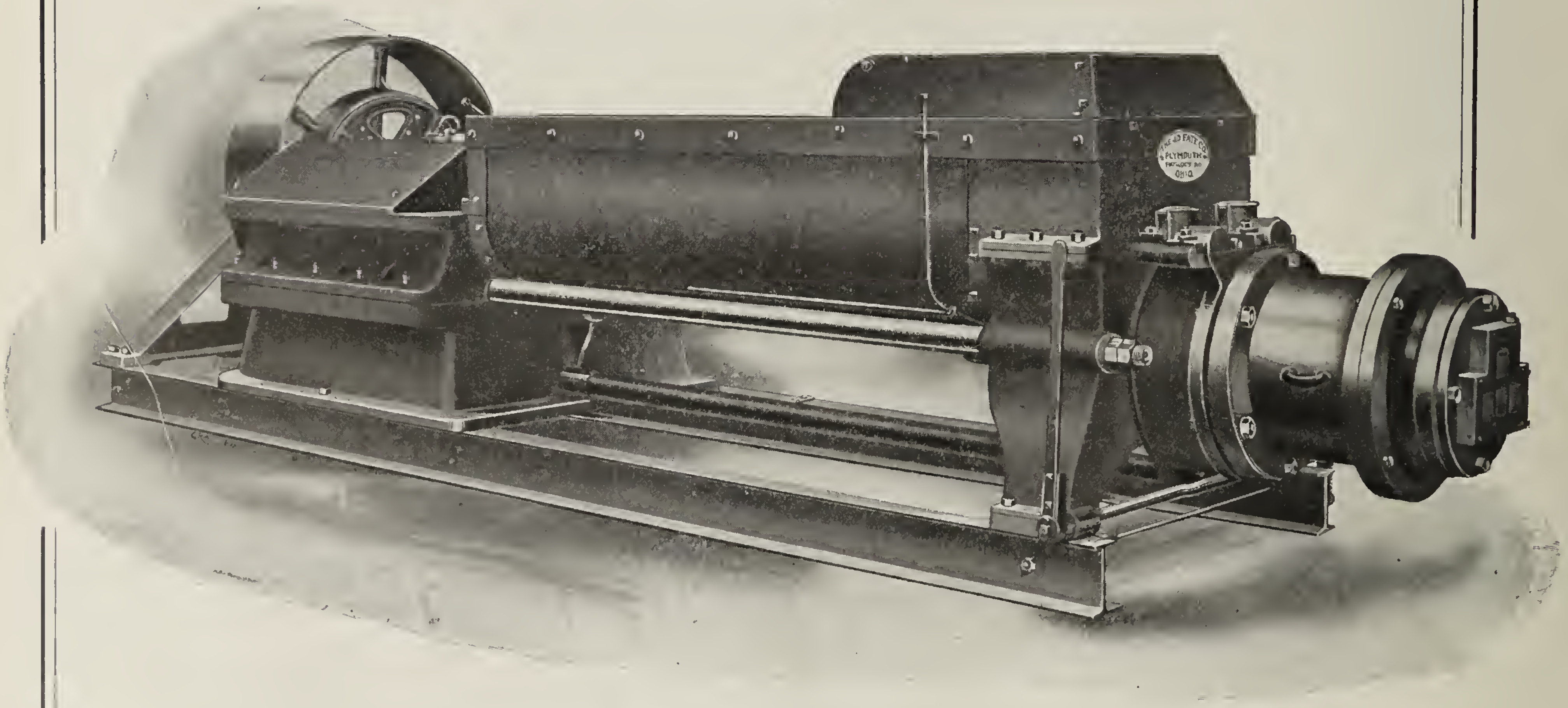


An Improved Premier Brick Machine, mounted on "I" Beams and self-contained Double Pug Shaft type. Steel Gears Running in Oil in Dust Proof Case. The Journals all outside and free from the action of the gear.

Special Premier Hollow Ware Machine

Same as machine shown above except the Nozzle Augers which are of larger diameter.

See next page.



Without Doubt the Best Hollow Ware Machine in the World

TESTIMONIAL

Read carefully what W. C. Denison, President of the Ohio Clay Co., of Cleveland, O., which is one of the largest and oldest makers of Hollow Clay Building material, says of the Special Hollow Ware Machine.

OFFICE OF THE PRESIDENT

The Ohio Clay Company
1335-1337 Schofield Building
Cleveland, O.

IT INTERLOCKS

The J. D. Fate Company,
Plymouth, Ohio.

November 16, 1912.

Gentlemen:-

We feel that it is not only a pleasure, but a duty, to tell you how admirably your special hollow ware machine, "Premier" does its work for us. It has now produced about nine thousand tons of ware for us. We easily make one hundred thousand hollow brick on it, or one hundred and seventy-five tons of Denison Interlocking Tile, or other tiles, per ten hour day.

We like the machine "all over"; it is built so solid and durable.

Before purchasing we were in doubt with regard to the combined machine feature. We now would have no other.

Your special type double shaft pug mill, with its positive feed to the augur machine, works perfectly.

The gears all working in oil with no leakage to the floor, entirely encased from dust and danger of accident is fine, and the whole machine works so noiselessly and does it so thoroughly well that you are to be highly complimented by the clay working people for your success in producing just what they have been looking for to produce their hollow ware.

Very respectfully,

THE OHIO CLAY COMPANY

W. C. Denison,

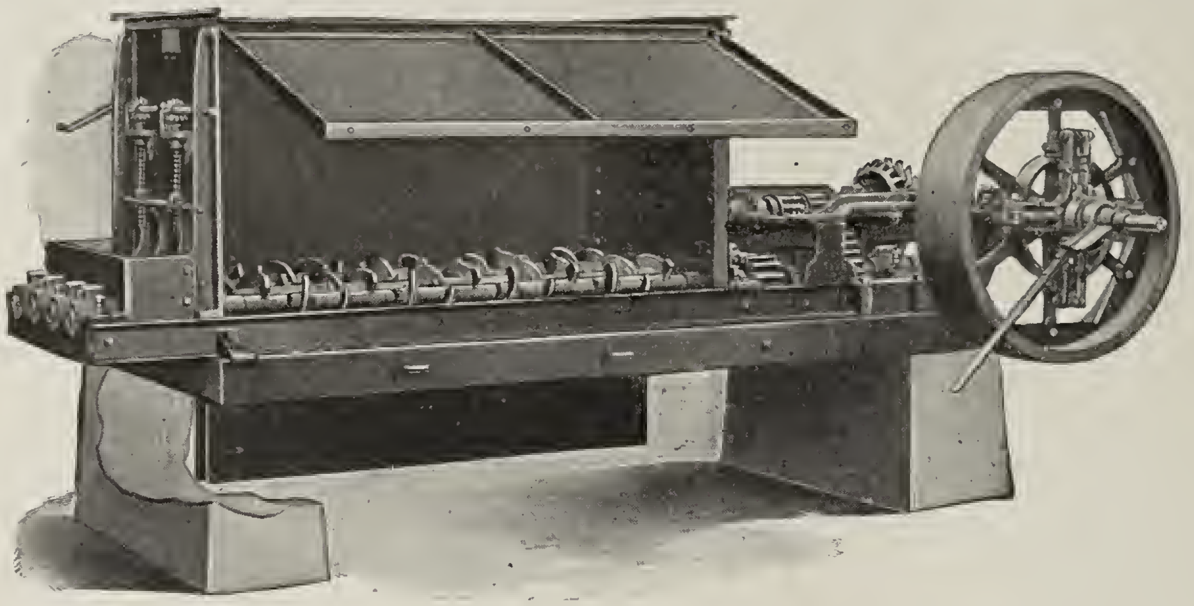
President.

The J. D. Fate Company, Plymouth, Ohio

Western Office: 604 Blake-McFall Building, Portland, Ore., A. E. Davidson, Representative
Eastern Office: 50 Church St, New York City. Jas. A. Ridgeway, Representative
Manufacturers' Equipment Co., Dayton, Ohio, Sales Agents

A Practical Clay Feeder

Increases the Capacity of Your Machine



The hopper of the Feeder will hold the contents of two ordinary clay cars which is fed automatically to the machine in a regular and steady stream, insuring a constant supply of clay in the machine, and saves the labor of a man who ordinarily shovels the clay into the disintegrator or machine.

Are not these two items inducement enough for you to fully investigate this feeder?

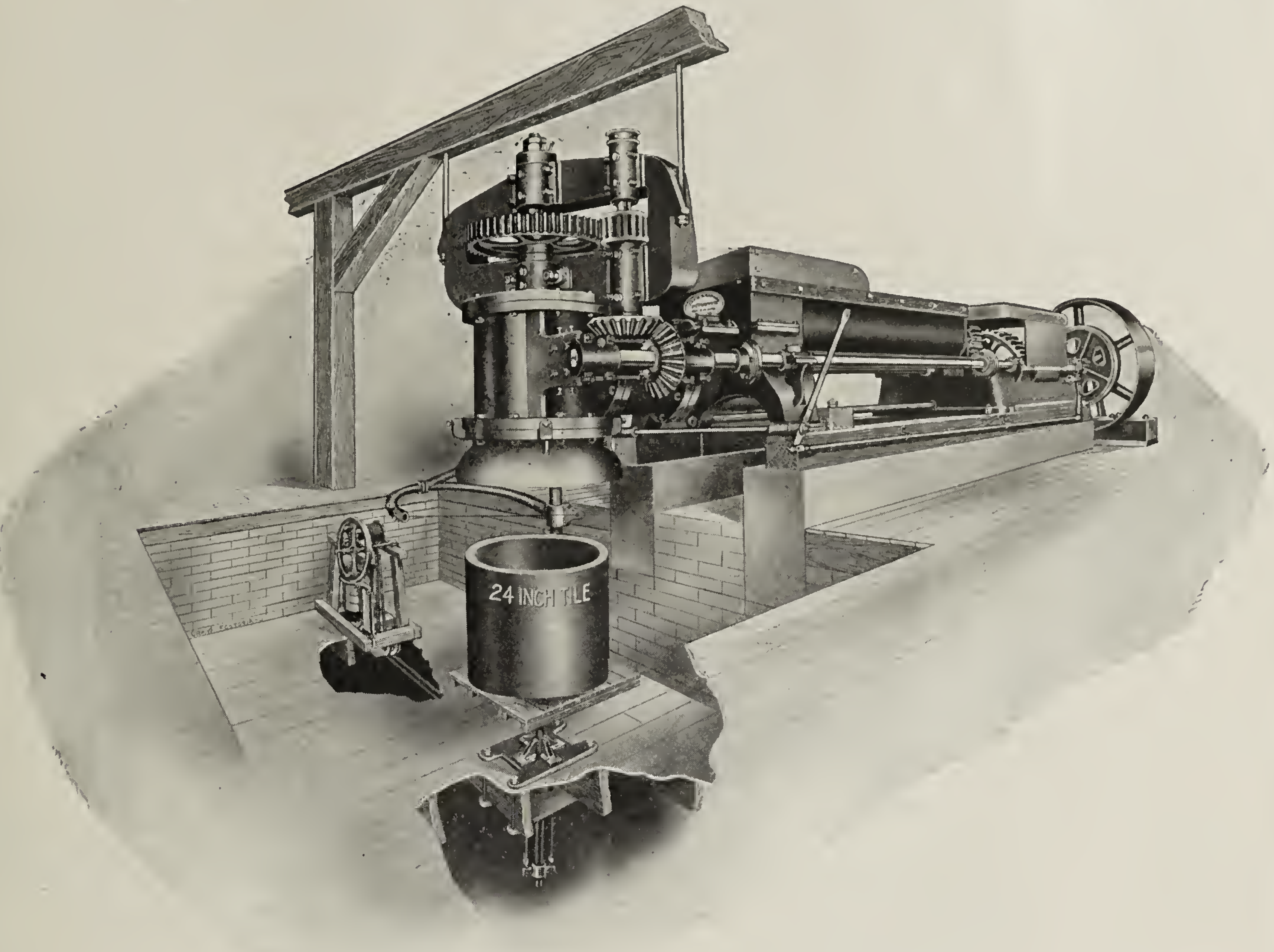
A postal card will bring you full information.

The J. D. Fate Company
Plymouth, Ohio

Western Office: 604 Blake-McFall Bldg., Portland, Ore., A. E. Davidson
Eastern Office: 50 Church Street, New York City, Jas. A. Ridgeway, Representative
Manufacturers' Equipment Co., Dayton, Ohio, Sales Agents

The Justice Radiated Heat Dryer—Successful Results Always Certain

An Improved Vertical Attachment for Large Tile



Built practically on the same plan as the well known Vertical Attachment built by the J. D. Fate Company for a number of years, and which is in successful operation in many tile factories.

The demand for machinery to make the extreme large sizes became so great that the Fate Company designed a new and improved attachment for their Imperial Machine by means of which tile as large as 30 inches in diameter can be successfully molded.

One of the features of the machine is the hollow auger shaft in the attachment by means of which the core bridge is eliminated.

Another feature is the improved arrangement, it being of the sewer pipe type.

A postal card will bring you full information

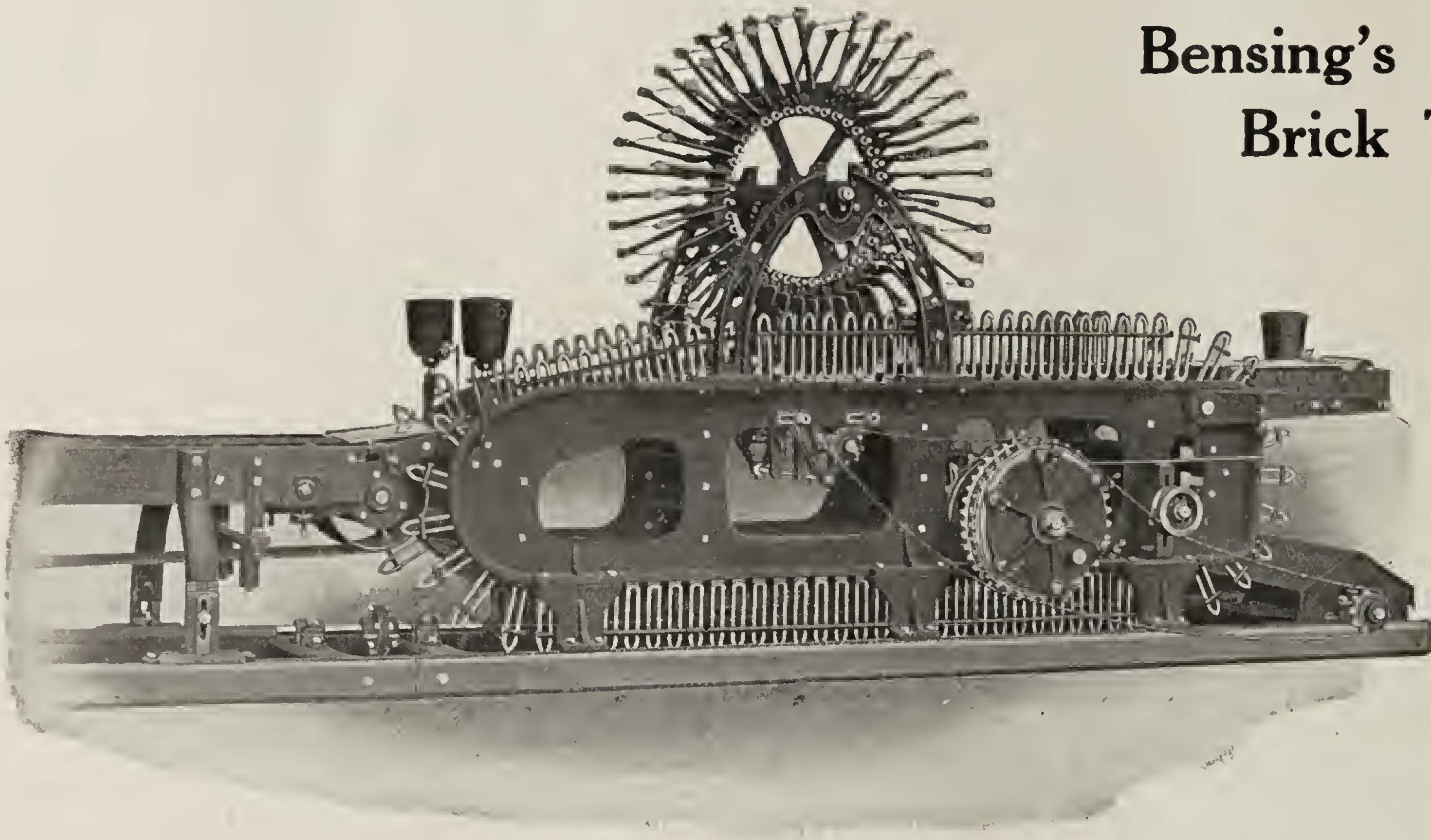
THE J. D. FATE COMPANY
PLYMOUTH, OHIO

Western Office, 604 Blake-McFall Bldg., Portland, Ore., A. E. Davidson
Eastern Office: 50 Church Street, New York City, Jas. A. Ridgeway, Representative
Manufacturers Equipment Co., Dayton, Ohio, Sales Agents

The Justice Radiated Heat Dryer—Successful Results Always Certain

Bensing Cutting Tables

Bensing's Side Cut Brick Table



Absolute Down Cut

Entirely Automatic

Never Cuts a Waste Brick

Best in the World

Bensing's End Cut Brick Table with Belt Delivery

Especially Adapted for Cutting End Cut Hollows

Capacity Unlimited

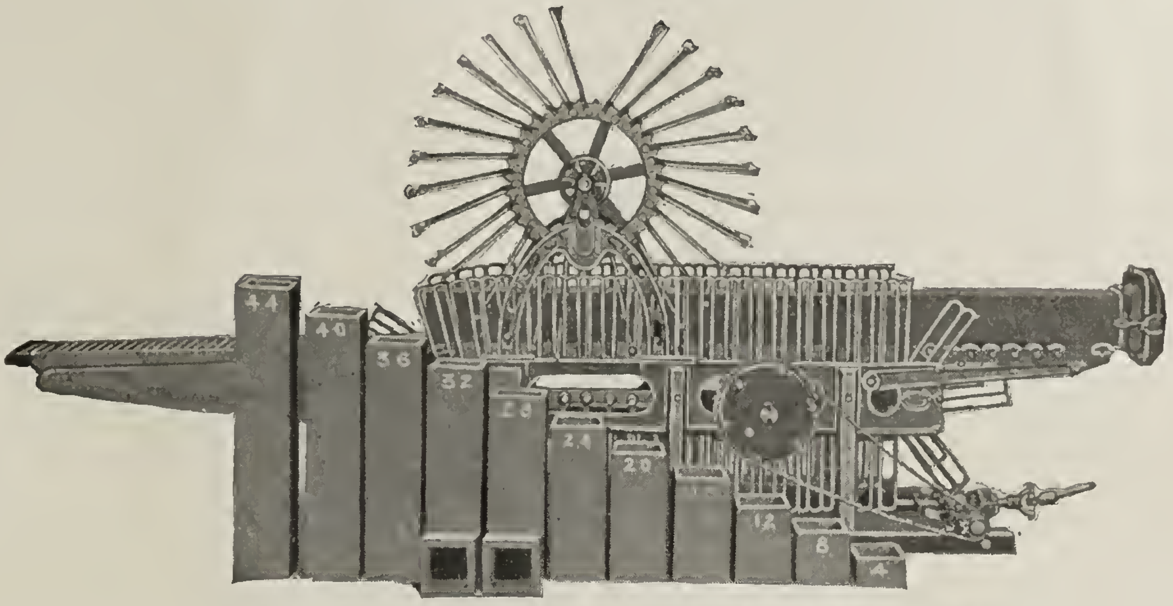
J. D. FATE CO.
PLYMOUTH, OHIO

Bensing End Cut Brick Table

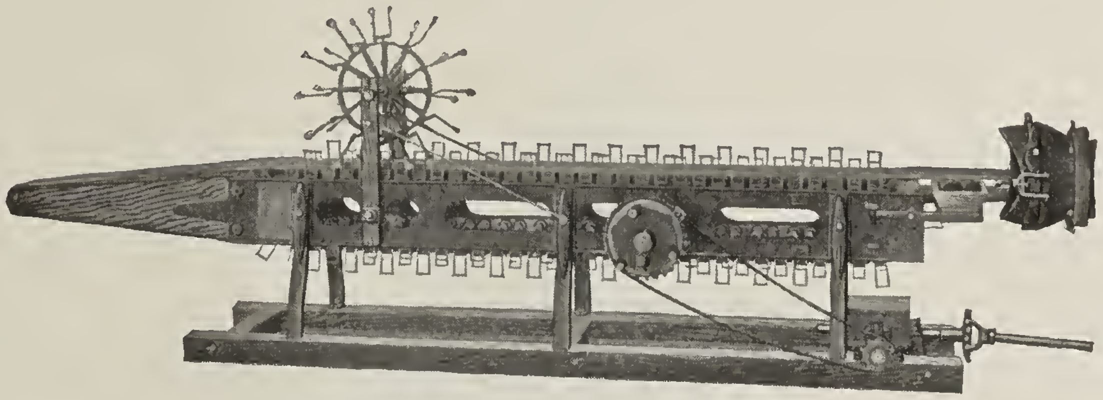
With Roller Delivery

Cuts Brick All of One Length and True and Square On the Ends

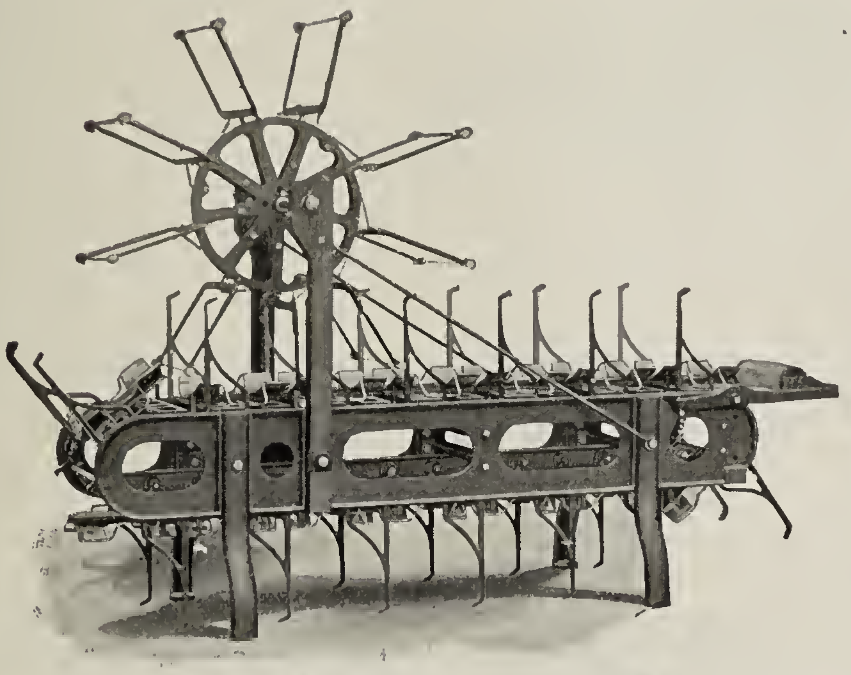
Bensing Cutting Tables



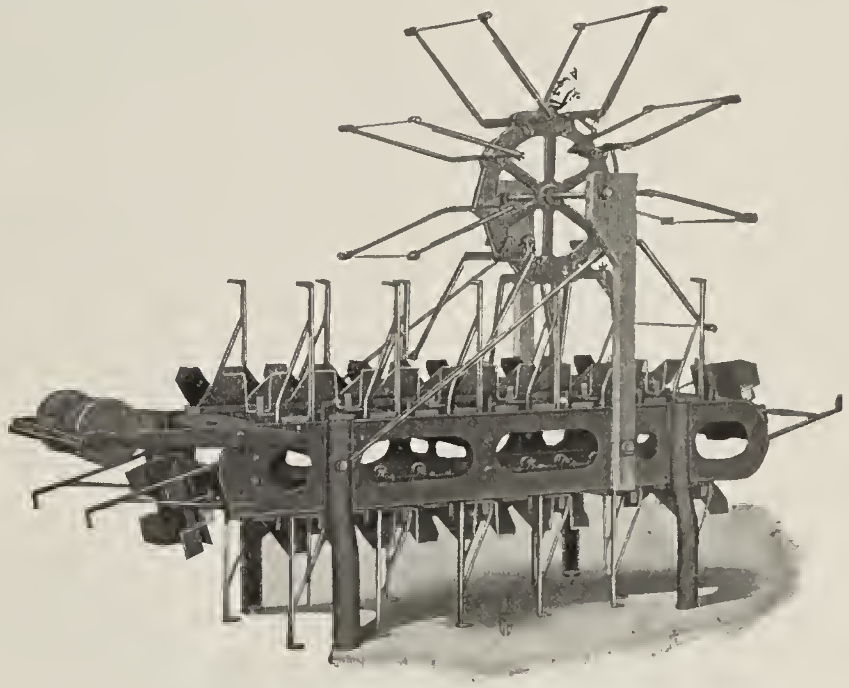
Special Block Cutting Table with Roller Rack Delivery



Special Roofing Tile Cutting Table



Tile Table for 3 to 8 inch Tile

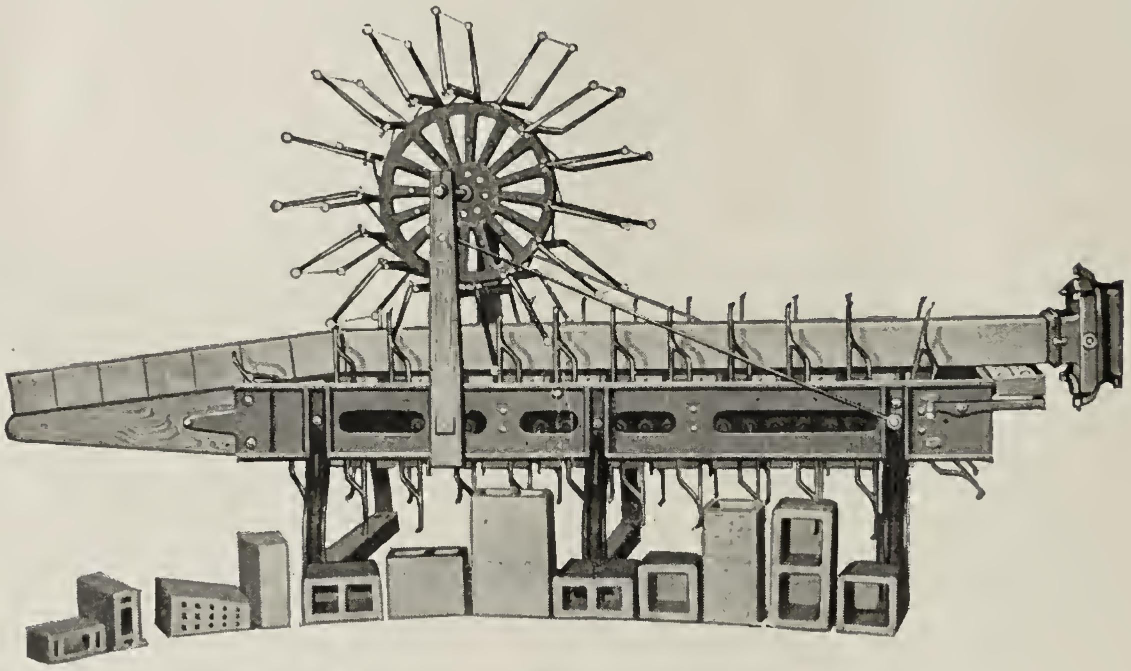


Tile Table for 10-12 inch Tile

The J. D. Fate Company, Plymouth, Ohio

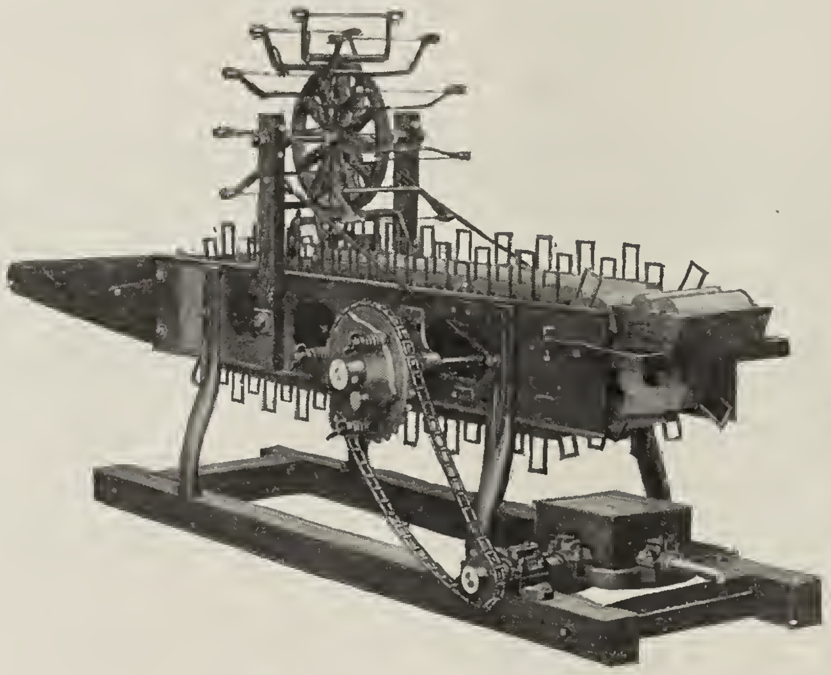
Western Office: 604 Blake McFall Building, Portland, Ore., A. E. Davidson, Representative.
Eastern Office; 50 Church St. New York, City, Jas. A. Ridgeway, Representative
Manufacturers Equipment Co., Dayton, Ohio, Sales Agents

Bensing Cutting Tables



Special Block Cutter with Belt Delivery

The
J. D. Fate Co.
Plymouth, Ohio

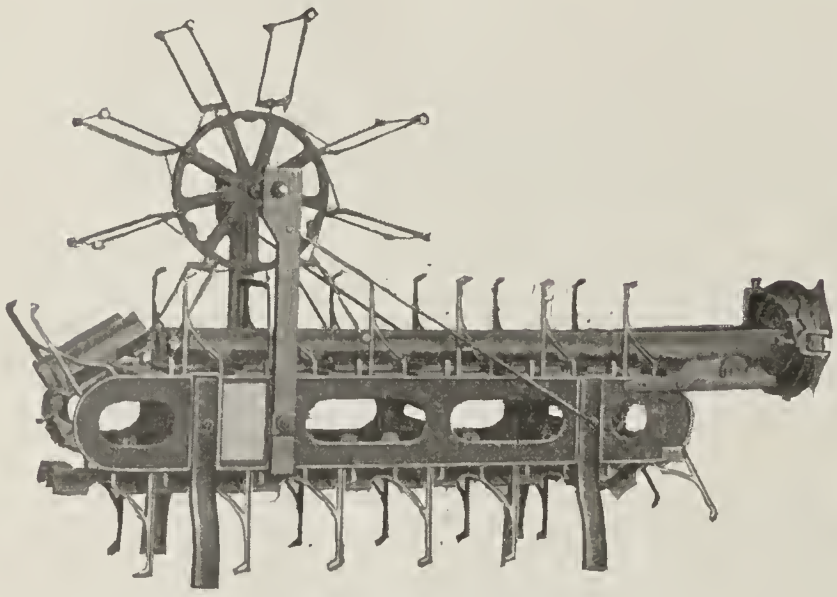


Special Floor Tile Cutter

Western Office
604 Blake-McFall Building, Portland, Ore.
A. E. Davidson, Representative

Eastern Office
50 Church Street, New York City
Jas. A. Ridgeway, Representative

Manufacturers' Equipment Co., Dayton, Ohio
Sales Agents



Tile Cutter Cutting Double Stream

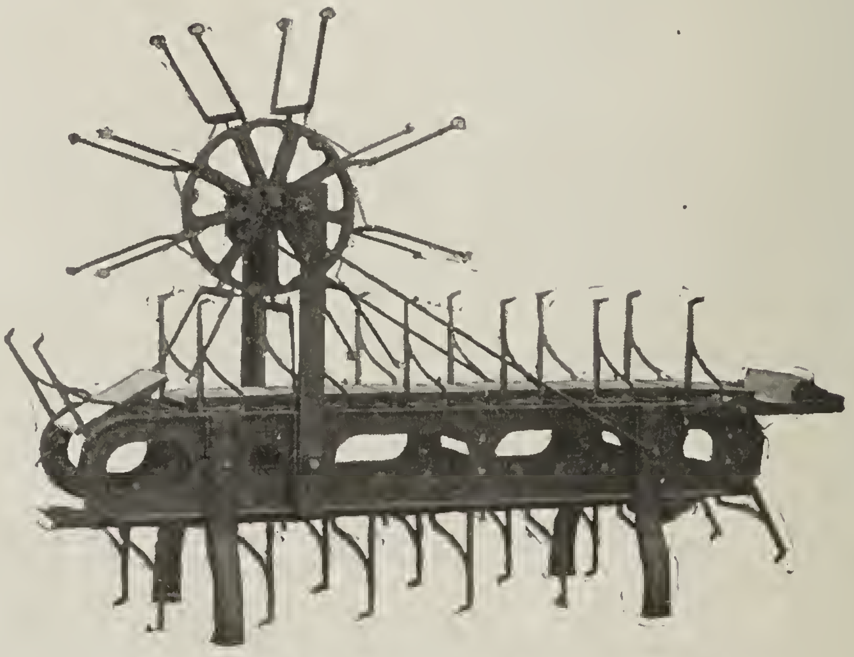


Table Arranged for Cutting Hollow Blocks

PRESERVATION REVIEW
08/04

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